VOL. XIX, No. 5 CHICAGO, February 2, 1911 $3.00 PER YEAR

MOTOR AGE

Getting Weighed

Business World Will Have Its Chance To Study Commercials at Second Week in Coliseum

NEXT week will be weighing week in Chicago. That is, so far as the commercial car is concerned. The first separate exhibition of commercial cars will open at the Coliseum Monday evening, February 6, and continue for the week, this show running the second week of the national exhibition in progress this week. Two years ago Chicago had a commercial show which ran during the same week as the pleasure car section. It was held in a separate building, the Seventh Regiment armory, three blocks from the Coliseum, and not being a pronounced success as was expected it was abandoned the following year. A fire while the show was in progress, and which destroyed the armory decorations, worked considerable havoc to the value of the commercial car show.

Chicago Has Almost Twice as Many Exhibitors of Power Wagons as New York City

The coming show is looked forward to with great interest. This interest has been increased due to the unexpected attendance at the commercial show at the Madison Square garden, New York, which was held the week following the

THE CLARK DELIVERY WAGON WITH EXPRESS SIDES AND WITH THE MOTOR LOCATED UNDER THE SEAT

pleasure show. The attendance has been announced as practically half that of the pleasure car week. This is phenomenal when it is remembered it did not open until Monday night and continued until Saturday, whereas the pleasure car affair opened on a Saturday and continued until the following Saturday night.

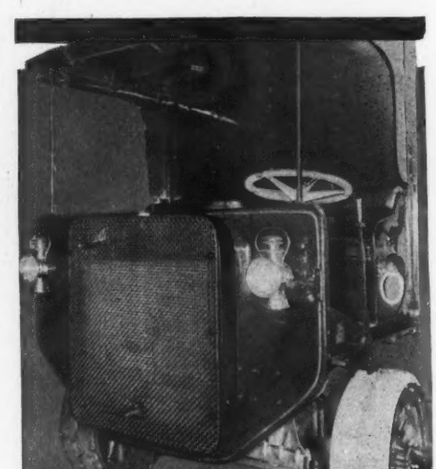
If New York did inaugurate in the commercial show, it is expected that Chicago will do better because there are almost double the number of exhibitors who will show delivery wagons and trucks. In addition there will be a considerable accessory show, the majority of the members of the Motor and Accessory Manufacturers having arranged to stay for the full time. In order to boom commercial interests in Chicago a motor truck association has been formed, and it is expected that this, together with other attractions that have been scheduled, that a successful show will be the outcome. This is looked for.

The commercial car has not made as much progress in Chicago as in New York. New York adopted the truck and delivery wagon ahead of Chicago. The streets in New York have averaged up better than those in the Windy city, a fact that has helped the sale of vehicles. Within the last year Chicago has taken up the commercial car in earnest, and many of the big mercantile houses and many of the large wholesalers, who have been experimenting with different commercial wagons for the last 5 years, have finally adopted the heavy truck, or the light delivery wagon, and are buying them in quantities. This augurs well for the future of the industry so far as Chicago and its suburbs are concerned.

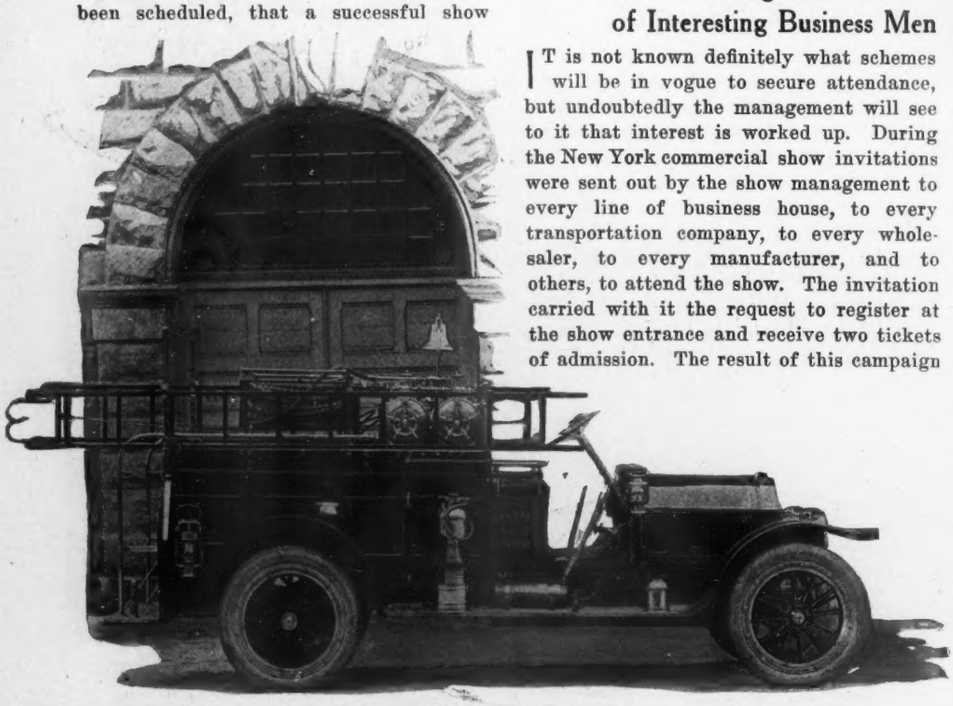
New York's Thorough Method of Interesting Business Men

IT is not known definitely what schemes will be in vogue to secure attendance, but undoubtedly the management will see to it that interest is worked up. During the New York commercial show invitations were sent out by the show management to every line of business house, to every transportation company, to every wholesaler, to every manufacturer, and to others, to attend the show. The invitation carried with it the request to register at the show entrance and receive two tickets of admission. The result of this campaign was that thousands of useful signatures with addresses were obtained, and an unexpectedly large attendance of those really interested in the commercial business obtained thereby. It would be well if Chicago would follow some scheme of this nature, because work of this kind is the coöperation that the manufacturer wants in interesting the public in a new product.

Selling commercial cars is a different problem from selling pleasure cars. Up to the present many pleasure cars have been bought by the color of the upholstery and the finish of the body. With commercial cars, external paint is not the leading consideration. The business man, or his transportation expert, has but one argument, "How does it compare with the horse?" With the merchant it is a case of "Is it cheaper to use motor trucks than horses?" Added to this is the other query, "Is the motor car reliable?" These are the two great problems with which the merchant wrestles. Reliability must be had at any cost. The merchant whose goods must be shipped on a 5 o'clock train cannot afford to have the shipment delayed by some holdup of the truck. A delay of 15 minutes does not mean



FRONT HEWITT 10-TON TRUCK SHOWING MOTOR ACCESSIBILITY—THE HEAVY IRON GRATING PROTECTS THE RADIATOR—THE RADIATOR IS REMOVABLE AND WHEN OUT THE MOTOR CAN BE SLID FORWARD THROUGH THE OPENING



THE NEW KISSEL HOSE AND CHEMICAL AND LADDER WAGON BUILT FOR THE KANKAKEE FIRE DEPARTMENT

solely 15 minutes lost—it may mean the loss of a sale and a drop in the estimation of that house by the purchaser. Promptness is one of the great factors in business today, and the merchant insists on reliability, if nothing else. No matter what the cost, if the truck is not reliable it is not a paying investment, and the business man knows this.

Cost is a great criterion to the maker. Each large corporation using hundreds of horses knows the exact length of the useful life of the horse, and knows the exact cost of maintenance; knows the cost of horse-drawn vehicles; knows the cost of maintaining these vehicles; and knows the cost of help. When the motor was introduced, the entire transportation system had to be reorganized. All conditions are changed. The location of the stables is changed because the motor truck has to be housed in a garage. It may be that the loading and unloading facilities have to be changed. With the buyer it may be the problem of selecting the proper carrying capacity of the truck is one of the big problems. The business of one concern is such that a 10-ton truck is better than five 2-ton trucks. With another concern two 5-ton trucks are preferable, and with another company the balance of favor is with three 3-ton vehicles. Still another concern finds it advantageous to use a combination of 5-ton, 3-ton, 2-ton, and perhaps 1½-ton trucks. It is these varied problems with which the business man has to wrestle, and it is the solution of these that gives him so much worry.

Buying Commercial Vehicles Is A Fine Art In Itself

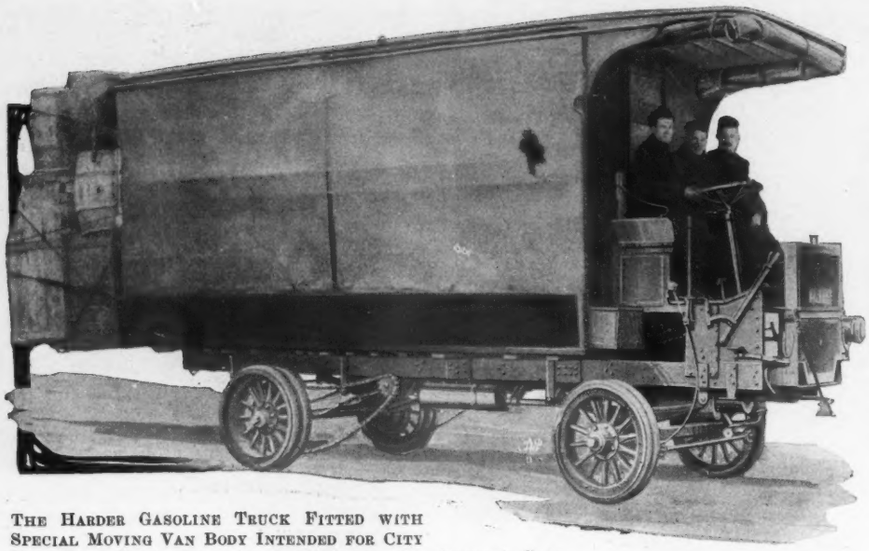
With such a problem before him, as already stated, there is little reason why the business man weighs the transportation possibilities of the motor truck, an unknown quantity to him, with the horse-drawn vehicle, a known quantity to him. The buying of one truck is not the problem, but rather the resolving of his transportation by motor. If a merchant uses forty horse-drawn vehicles and buys but a single truck, he has purchased the truck as an experimental one which will serve as a guide. From it and its performances he can gauge the number of trucks necessary to supplant his entire horse system. From this one truck he can get a fair estimate of the reliability of the power wagon. From this one truck he can solve the question of garaging and repairing. From this one truck he can conclude what changes are necessary in his shipping departments. From this one truck he can practically solve the driver question. In short, the one truck is the first big step in the installation of an entire system of motor transportation.

It is an entirely different thing buying a commercial car as compared with buying a pleasure car. The pleasure car is simply an adjunct to the pleasure life of the individual, whereas the commercial car is a potent factor in his business organization. It is because of this that the advent of the car has been slow. Some concerns have used one truck for 3 years before finally deciding to supplant their entire horse system with motor wagons. This has been a satisfactory process both to the consumer and the manufacturer, and it is beneficial that business men should carefully weigh the entire question before buying in a wholesale manner. Those concerns that are now ordering fifteen, twenty-five, or as high as forty trucks at once, have experimented with one, two, or three vehicles during the past and have convinced themselves that the truck is all right, and have also solved, to their own satisfaction, the particular system of truck or delivery best suited to their particular needs.

There have been concerns who have erred in the installation of motor trucks.

RAMBLER CHEMICAL AND HOSE WAGON FOR FIRE DEPARTMENT USE—IT IS FITTED WITH PNEUMATIC TIRES

KNOX FIRE ENGINE, CHEMICAL AND HOSE WAGON—THE MOTOR WHICH DRIVES THE WAGON ALSO DRIVES THE WATER PUMP—THE ILLUSTRATION SHOWS THE WAGON DRAWING ITS WATER SUPPLY FROM A STREAM AND FORCING IT THROUGH THE NOZZLE



THE HARDER GASOLINE TRUCK FITTED WITH SPECIAL MOVING VAN BODY INTENDED FOR CITY USE—THE MOTOR IS CARRIED UNDER THE DRIVER'S SEAT

Handling Merchandise

System Should Prevail When It Comes To Deciding Method of Using Power Wagons to Best Advantage

Without sufficiently matured deliberation, some New York houses have installed at one time from fifty to seventy-five motor vehicles without a previous experimental course. The result has been a white elephant on their hands. They have not known the particular details of handling such a fleet of trucks or delivery wagons. They have not understood the best methods of keeping them in successful operation. They have not solved the best methods of meeting breakdowns on the streets. There have been a score of conditions they have not solved, and, as a result, trouble has been encountered in many quarters. In contrast with the installation of a complete motor outfit at one time are those concerns that have gradually installed the motor delivery. One by one new motor vehicles have been added to supplant horse-drawn types, and more than 3, or sometimes 4 years being required to complete the transformation from horse to motor transportation. There scarcely is a case on record where such a transition has been made that the result has not been entirely satisfactory. Where this modus operandi has been followed, consolidation has gone hand in hand. It is a different problem caring for motor vehicles as compared with caring for horses and horse vehicles.

THE business man, intending to outfit with trucks or delivery wagons, first should settle his system of delivery. To explain: If a department store, in Chicago, is to supplant its horse-drawn vehicles with motor wagons, it will require several types of wagons, ranging from a 7-ton truck to a 1,000-pound delivery wagon. One method of handling this is to establish distributing depots in different sections of the city. The deliveries are taken from the retail store to these depots in crates or trunks on 5-ton trucks. Once at the distributing depots the loads are transferred to ton trucks, which distribute to sub-depots, and at these sub-depots are 1,000 or 1,500-pound delivery wagons, which make the home to home delivery. This system has been found more advantageous than that in which the 1,500-pound delivery wagon is loaded at the retail store and sent on its long trip to the residential sections where it makes its house to house delivery.

Several Truck Sizes

Experiments have shown that it is cheaper to transport to the distributing depots on 3 or 5-ton trucks than it is by delivery wagons. Some retail merchants employ the trucks for this main delivery work and use horse vehicles for the house-to-house delivery.

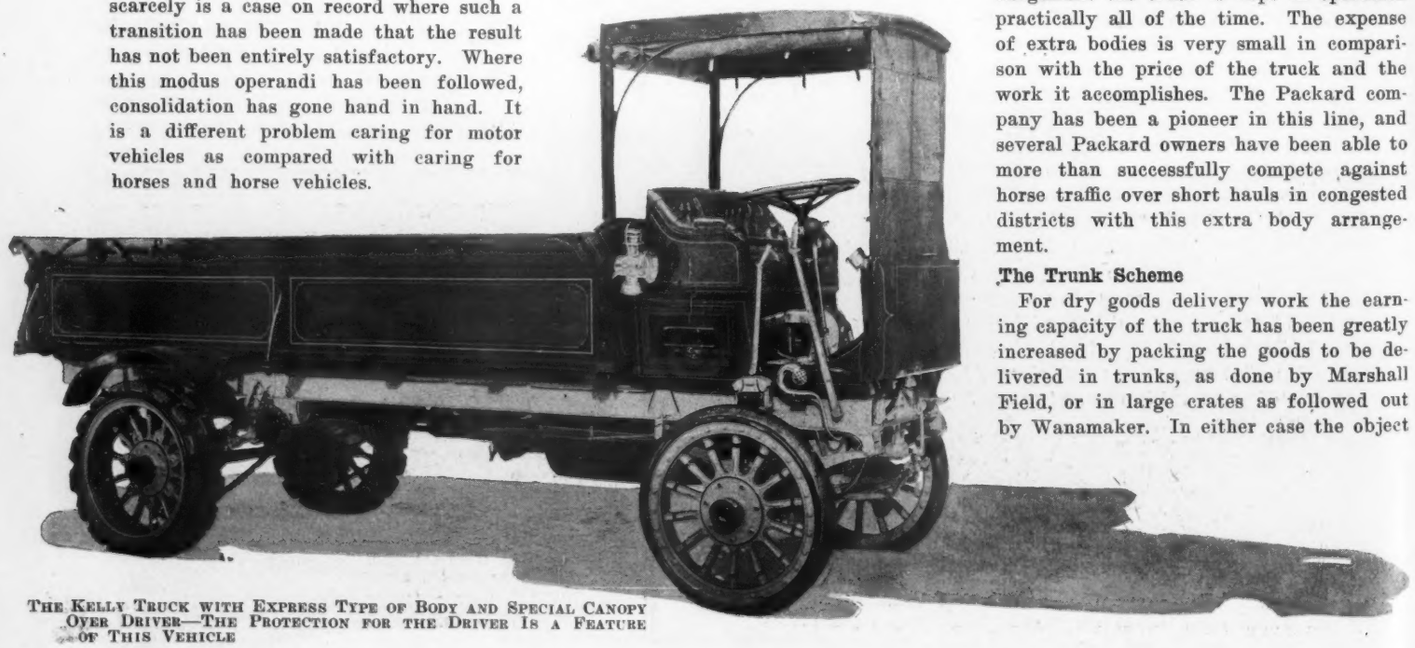
One of the difficult fields for the motor truck to compete with horse-drawn traffic is in short hauls between a warehouse and a railroad depot, or between a warehouse and wholesale or retail stores. It is a well known fact that street congestion in the vicinity of railroad depots and warehouses generally is such that the truck cannot travel at a faster pace than the horse-drawn vehicles. Where such is the case the larger the carrying capacity of the truck the more advantageous, because a large truck carrying 5, 7 or 10 tons travels slower than a 2 or 3-ton truck. The merchant or manufacturer should take these matters into consideration when selecting the vehicle for his particular case.

Short Haul Systems

Two or three concerns have done much towards solving the question of short hauls with the motor truck. One of the big solutions is in the line of the demountable body. A truck is purchased with two or perhaps three different bodies, which can be slipped on or off with ease. While the truck is hauling one load from the warehouse to the depot, another load is being put on an extra body at the warehouse and perhaps the third body is being unloaded at the depot. With this arrangement the truck is kept in operation practically all of the time. The expense of extra bodies is very small in comparison with the price of the truck and the work it accomplishes. The Packard company has been a pioneer in this line, and several Packard owners have been able to more than successfully compete against horse traffic over short hauls in congested districts with this extra body arrangement.

The Trunk Scheme

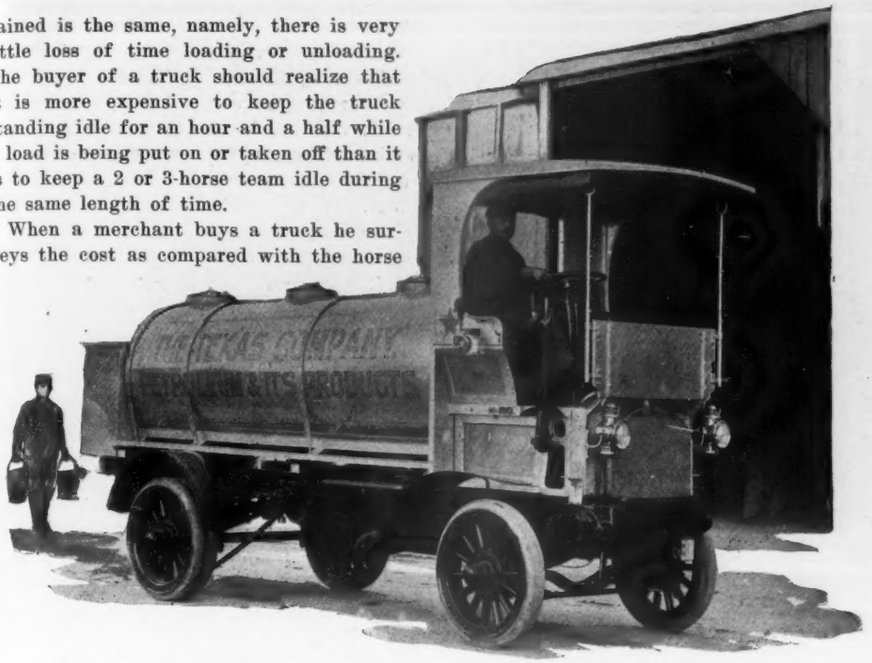
For dry goods delivery work the earning capacity of the truck has been greatly increased by packing the goods to be delivered in trunks, as done by Marshall Field, or in large crates as followed out by Wanamaker. In either case the object



THE KELLY TRUCK WITH EXPRESS TYPE OF BODY AND SPECIAL CANOPY OVER DRIVER—THE PROTECTION FOR THE DRIVER IS A FEATURE OF THIS VEHICLE

gained is the same, namely, there is very little loss of time loading or unloading. The buyer of a truck should realize that it is more expensive to keep the truck standing idle for an hour and a half while a load is being put on or taken off than it is to keep a 2 or 3-horse team idle during the same length of time.

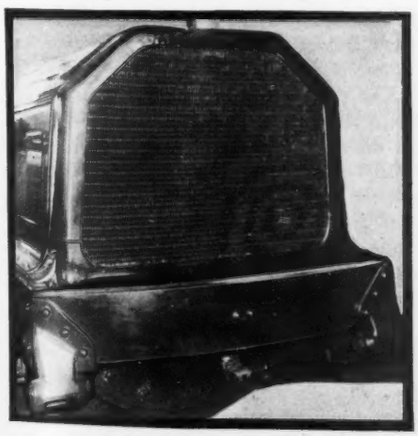
When a merchant buys a truck he surveys the cost as compared with the horse



MACK OIL WAGON FITTED WITH A FOUR-CYLINDER MOTOR LOCATED UNDER THE SEAT

system, and he never can arrive at a really accurate estimate until he takes cognizance of this multiple body system, or the crate or trunk system for use in such work.

The installation of these systems will in some cases call for a reorganization of the shipping system, the reconstruction of the loading platforms, etc. All of these cannot be accomplished in a day, a week, or



THE HEAVY CROSSPIECE TO PROTECT THE RADIATOR ON THE PEERLESS TRUCKS

a month; but they are, nevertheless, intrinsic parts of the installation of a motor truck system. You cannot make a truck system a success unless you use motor truck environments that are best adapted for the work. If the horse-drawn facilities are adherede to, failure often follows.

Repairing Motor Trucks

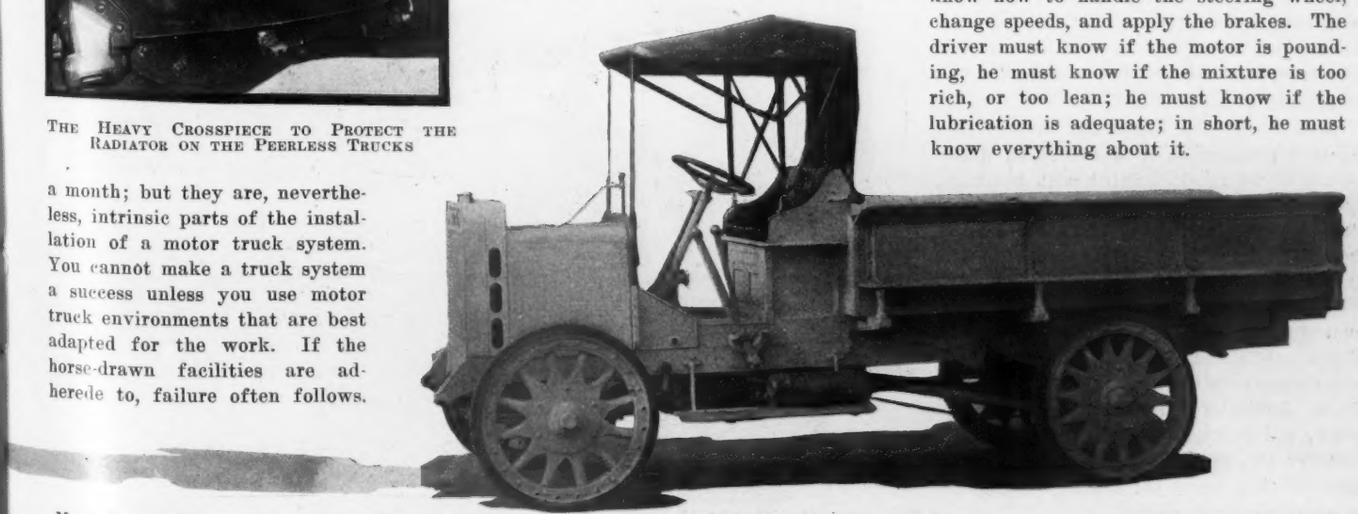
Chicago Public Library Secures Regularity of Running Through Caring for the Cars it Operaters

SOME truck systems have been successful solely because a successful repair department has been installed. Other truck systems have been discarded because the repair buiness has been placed in the hands of an incompetent garage force. No other system of motor delivery has shown better results in Chicago than that of the Chicago public library wagons. These wagons run on schedule every day over the entire city, delivering books from the main library in the loop district to the branches throughout the city. Each truck has its circuit as definitely marked out as a steam train running on its steel way. Each truck operates on a schedule, the same as a railroad train. Reliability is the great essential, and in spite of the fact that some of the trucks have been running for 5 years and were among the early commercial vehicles in the country, they are running with the same respect to schedules as the newer ones.

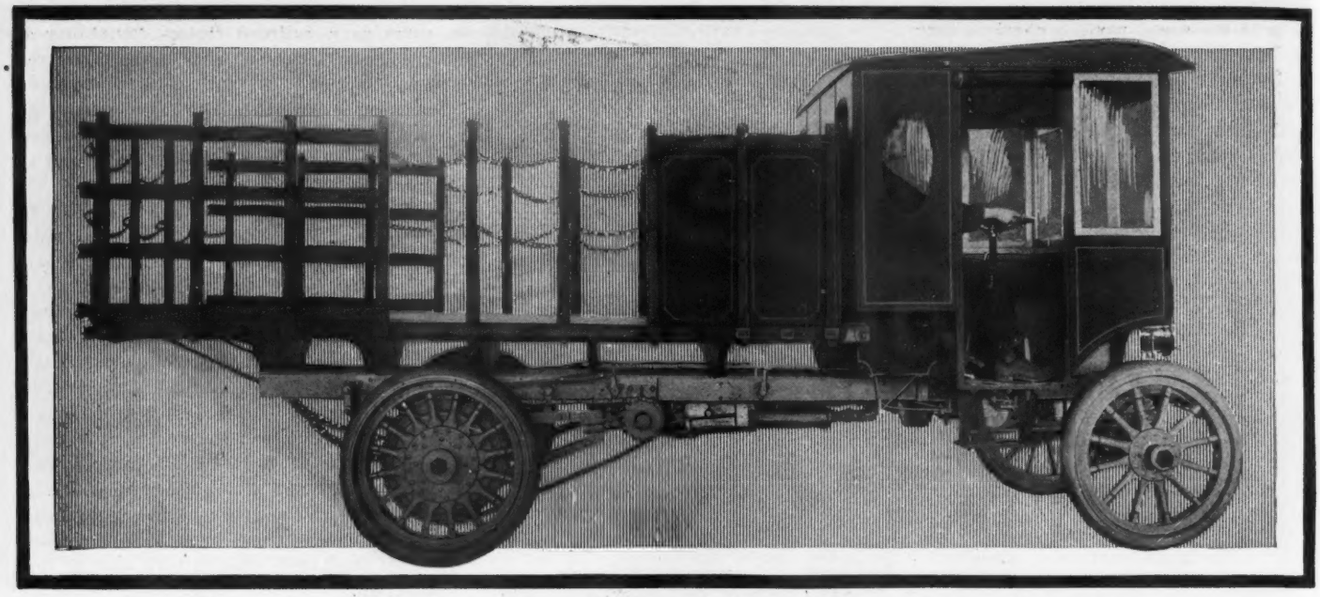
This desired regularity is largely due to the repair system and the drivers. Mr. Purer, in charge, has installed a repair shop in the court yard of the main library. In this are all necessary repair facilities from a crane, a lathe, a drill, down to an anvil and the other necessary parts. Each driver before he is given a car must serve an apprenticeship, the same as the engineer on the railroad locomotive must first serve in the shops and round house. The result is that the driver becomes perfectly familiar with the truck he has to operate, and should an emergency repair be needed on the road he is able to take care of the situation.

But the system goes still further. Each driver is required to make the repairs on his own truck. This has a most salutary effect. A driver will be more careful of his truck on the street if he knows that if anything goes wrong he will have to take care of it himself. He will, consequently, not be so apt to drop into a hole in the brick pavement and put an axle out of commission. He will be more apt to watch carefully the workings of the motor to see that nothing goes wrong, and if it goes wrong he will correct it before the little trouble becomes a serious affair.

Contrast this situation with that in which the driver has nothing to do with the repairing of the vehicle at night. If any little trouble occurs with the motor about the middle of the afternoon, he will let it drag along until night, knowing that he will not have to do the work. It is not of any special concern to the driver how serious the damage becomes at night, because other workmen will have to look after the job. In the operation of any commercial vehicle the driver should be familiar with his car. It is not enough to know how to handle the steering wheel, change speeds, and apply the brakes. The driver must know if the motor is pounding, he must know if the mixture is too rich, or too lean; he must know if the lubrication is adequate; in short, he must know everything about it.



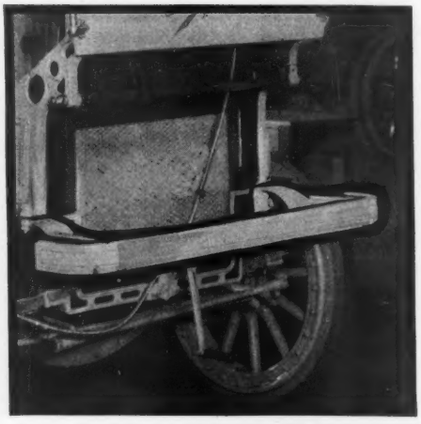
MAIS SHAFT-DRIVEN TRUCK WITH EXPRESS BODY—THIS IS ONE OF THE FEW TRUCKS THAT USE SHAFT DRIVE—A COMBINATION STATIONARY AND BEVEL-DRIVE AXLE IS USED



AVERY TRUCK IN WHICH THE DRIVER SITS AT ONE SIDE OF THE FOUR-CYLINDER MOTOR—THIS LOWERS THE DRIVER'S POSITION AS COMPARED WITH WHERE THE SEAT IS OVER THE TOP OF THE MOTOR

Manufacturers in Selling Trucks Are Likely To Talk Too Much on Speed and To Favor Overloading – Such a Proceeding Generally Brings Grief to All Parties Concerned in the Deal

MANUFACTURERS in selling motor trucks are apt to make two serious mistakes: First, they are generally inclined to talk speed too much; and second, they are apt to favor overloading and eliminate the necessity of careful repairing. More mistakes have been made and more truck reputations ruined by high speed than due to any other cause. The speed of many trucks has been so great that the trucks have literally racked themselves to pieces over the rough cobble stones, the broken-down macadam and the pitted asphalt streets. The present tendency to place governors on the motors is provigin a salvation, in that it curbs the driver and takes the speed problem out of his hands. In the early days of the truck it was the joy of many drivers to see how fast the truck could go. They were not content with following a street car, but would race it and beat it. With the governor, this is impossible, and as a result the truck's reliability has increased.



METAL BUMPER WHICH PROJECTS WELL TO THE FRONT OF THE RADIATOR ON THE GARFORD TRUCK

Overloading Dangerous

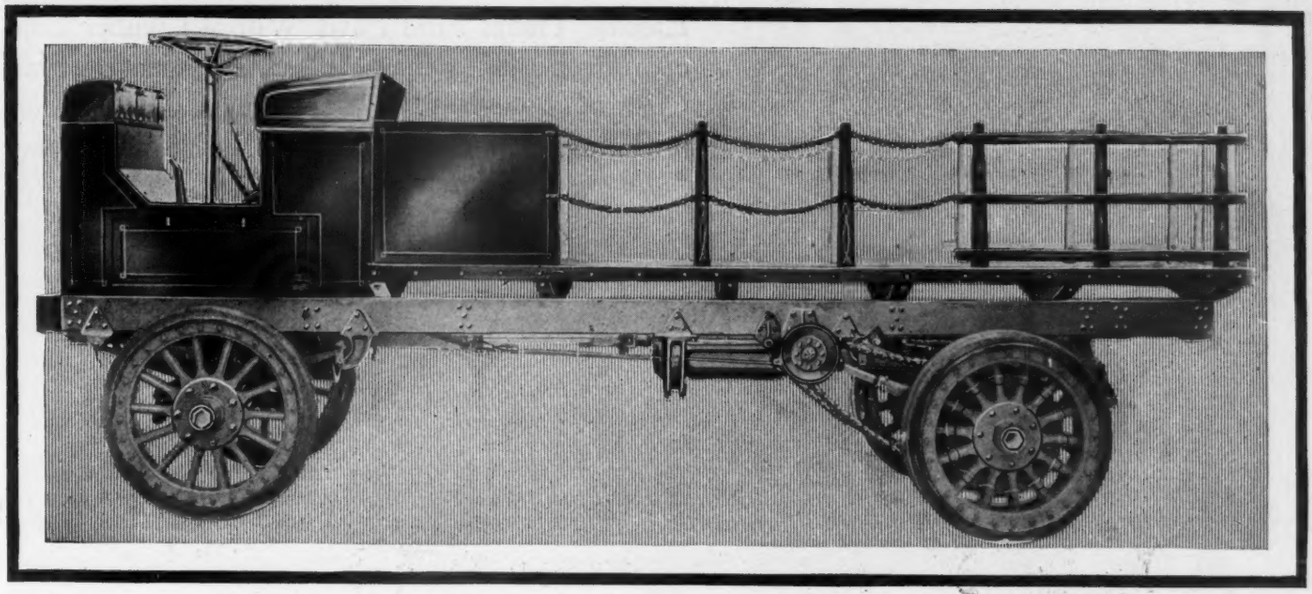
It is equally as dangerous to talk the oveload problem as it is the speed question. If the truck is fitted with bearings competent for 5 tons, those bearings are not adequate for 7 tons. If the tires have been sold by the tire maker for a 5-ton truck, they will not do for a 6-ton one. They may do for a while, but they will be short-lived and the consumer will have to pay the bill and the truck man and the tire maker bear the brunt of the criticism. There should be a limit of load on every truck, and it would be better for a manufacturer to refuse to sell to certain concerns if they knew the truck is going to be overloaded and abused.

One or two concerns are employing at the present time city detectives to watch the operation of their trucks in different cities. These detectives, if the term may be used, are experts; they watch to see if trucks to which a governor has been attached to the motor are operating with the governor, or if the seal has been broken and the truck, instead of operating at 10 or 12 miles an hour, is operating at 18 or 20 miles per hour. Wherever cases of this nature are discovered the fact is immediately reported to the company making the truck and the matter at once taken up with the owner.

Truck Detectives Used

These city detectives are going still further in their work, and are watching to see if the trucks are overloaded or not, and wherever a case of overloading is discovered this, too, is reported to the manufacturer. The result is that the manufacturer takes the case up direct with the owner, and if complaints should come in the manufacturer is in possession of the

THE ENCLOSED TYPE OF MARQUETTE DELIVERY WAGON WITH TWO-CYLINDER MOTOR UNDER FLOOR BOARDS



DAYTON COMMERCIAL POWER WAGON WITH COMBINATION STAKE AND PLATFORM BODY AND WITH THE ENGINE CARRIED UNDER THE DRIVER'S SEAT WHERE IT IS MOST ACCESSIBLE

real facts and can talk to the owner and give the exact reasons why the truck or delivery is giving trouble, if it may happen to.

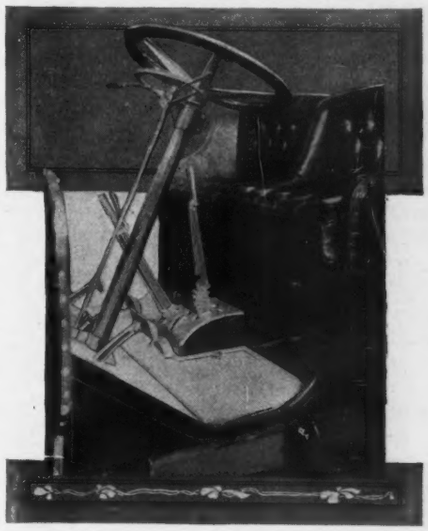
These detective experts are playing a still further role, namely, that of inspecting at any hour in the day the trucks of the manufacturer by which they are employed. These trucks may be in the hands of twenty different concerns in a city like Chicago or New York. If the detective expert discovers a truck in which the motor is heating, or pounding, the case is taken up before serious damage occurs. This is most excellent work and is doing wonders today to push the commercial vehicle problem along. It is placing the truck manufacturer in possession of the real facts, and it is also serving as a check on the owner who might want to get some free repairs or replacements, when, as a matter of fact, the trouble has been caused directly by overloading, overspeeding, or not careful attention to the vehicle.

Trucks in Lumber Yards

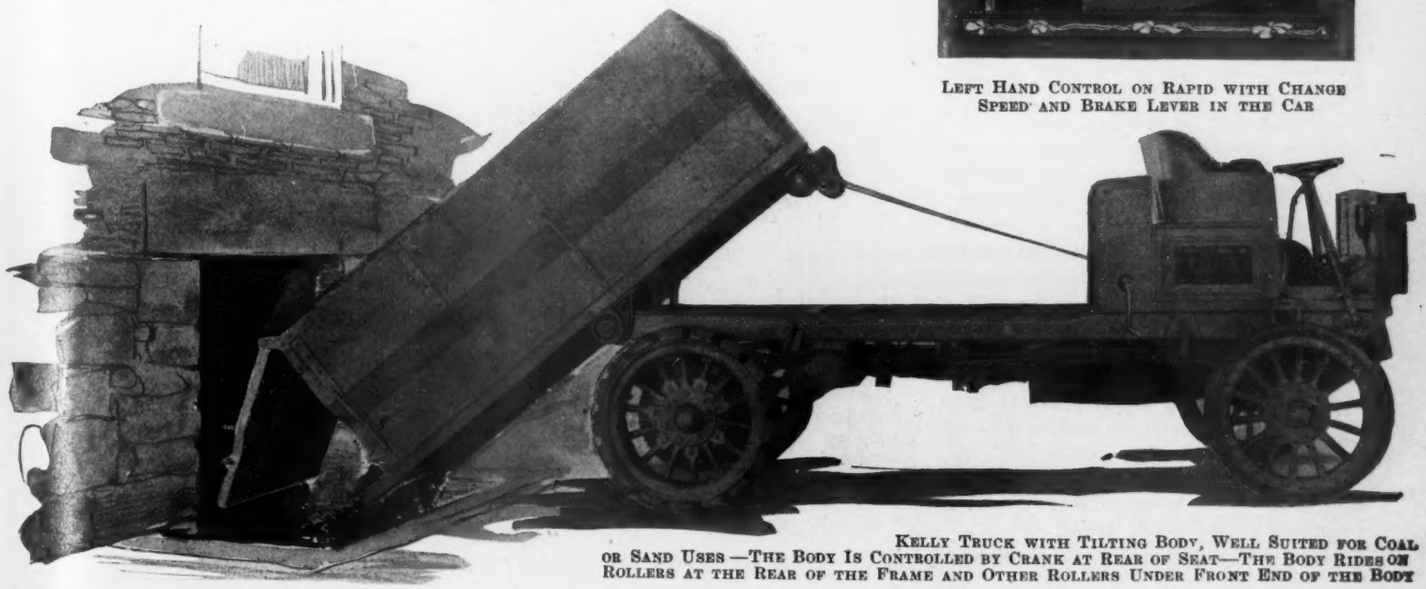
Some Boston Concerns Have Adapted the Power Wagon to the Peculiar Conditions of Their Business

LUMBER yards find motor trucks peculiarly adapted to the handling of lumber and in Boston there are several concerns which have taken up the motor quite extensively and which has resulted in the elimination of the horses to a considerable extent. One of these concerns is the George W. Gale Lumber Co., which uses Couple Gear 5-ton electric trucks, which have been converted into tractors by shortening the body, etc.

In the operation of these trucks horses are used to a certain extent in that first of all a horse-drawn vehicle makes the rounds of the yards gathering up the load of lumber. After this the wagon is drawn up to the main avenue of the yard and awaits the truck. When the truck arrives the driver finds that the front end of the horse-drawn rig has been jacked up, the front wheels drawn out, and everything is ready for him. He

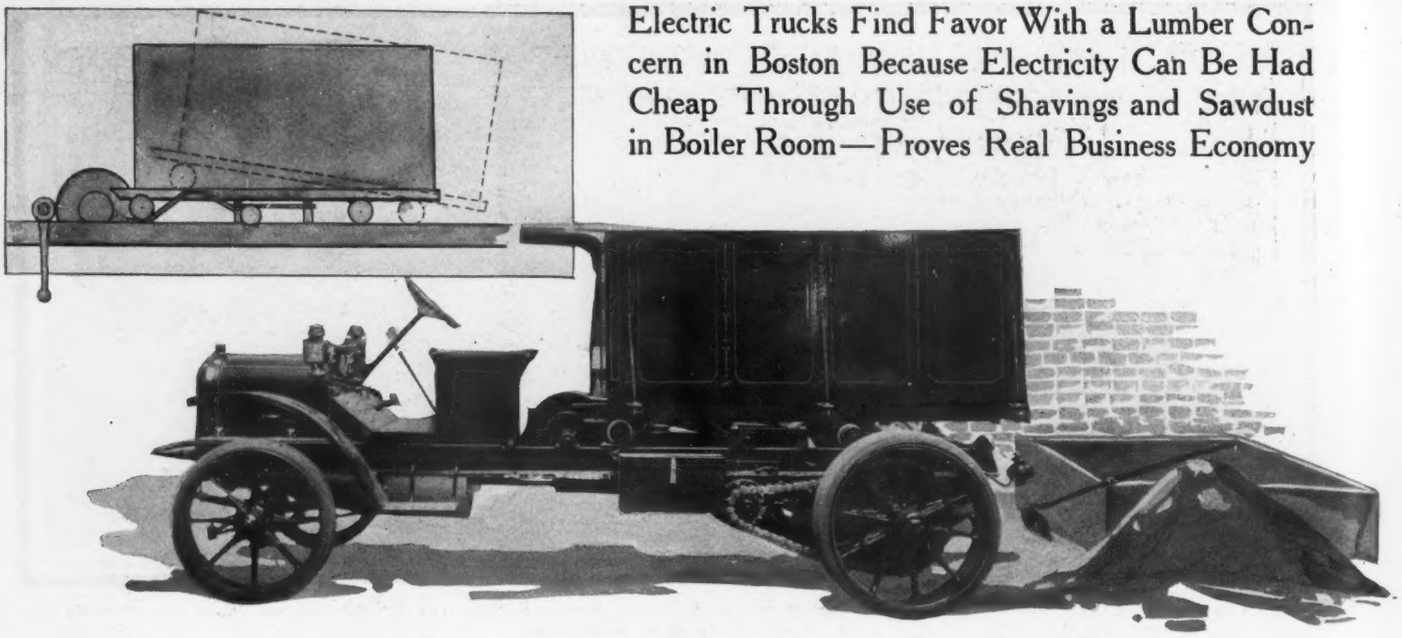


LEFT HAND CONTROL ON RAPID WITH CHANGE SPEED AND BRAKE LEVER IN THE CAR



KELLY TRUCK WITH TILTING BODY, WELL SUITED FOR COAL OR SAND USES—THE BODY IS CONTROLLED BY CRANK AT REAR OF SEAT—THE BODY RIDES ON ROLLERS AT THE REAR OF THE FRAME AND OTHER ROLLERS UNDER FRONT END OF THE BODY

Electric Trucks Find Favor With a Lumber Concern in Boston Because Electricity Can Be Had Cheap Through Use of Shavings and Sawdust in Boiler Room—Proves Real Business Economy



THE WHITE DUMPING TRUCK SUITED FOR HAULING SAND—THE BODY IS CARRIED ON FOUR ROLLERS, TWO IN FRONT AND TWO AT THE CENTER—THE FRONT ROLLERS RISE ON AN INCLINED TRACK TO DO THE TILTING—A CRANK WITH CABLE CONTROLS THE TILTING

backs the truck up to the wagon and attaches it to the truck by means of a king bolt, which fits into a hole in the plate over the rear axle. Thus the horse-drawn vehicle is converted into a trailer and the tractor goes on its way with the load, while the horses are hitched to another wagon and go after a fresh load. In this way both truck and horses are working all the time.

Economical reasons figure in the adoption of the electric truck by this concern, because it is discovered that it can charge its own batteries at a comparatively low price. The company produces its own electricity by a steam-driven plant, which uses for fuel shavings, sawdust and waste lumber, so that the current needed to charge the batteries for the trucks is secured at an extremely low price.

Boston's Demountable Bodies

Another Boston lumber concern, the Curtis & Pope Lumber Co., has a fleet of three trucks consisting of a Packard, a White and Rapid, the Packard being used for long hauls and heavy loads and the other two for what might be called jobbing work. Keen business men in the company saw that they would have to utilize every minute of time in order to take full advantage of the new system, and so removable bodies were designed and put into service, the main idea of which is secured from the practice in vogue with horse-drawn vehicles. The Packard has two of these bodies, each of which is 6 feet wide and 12 feet long, with rollers at the front and back, the forward roller being higher than the rear one to permit the load sliding off by gravity when the rollers are freed.

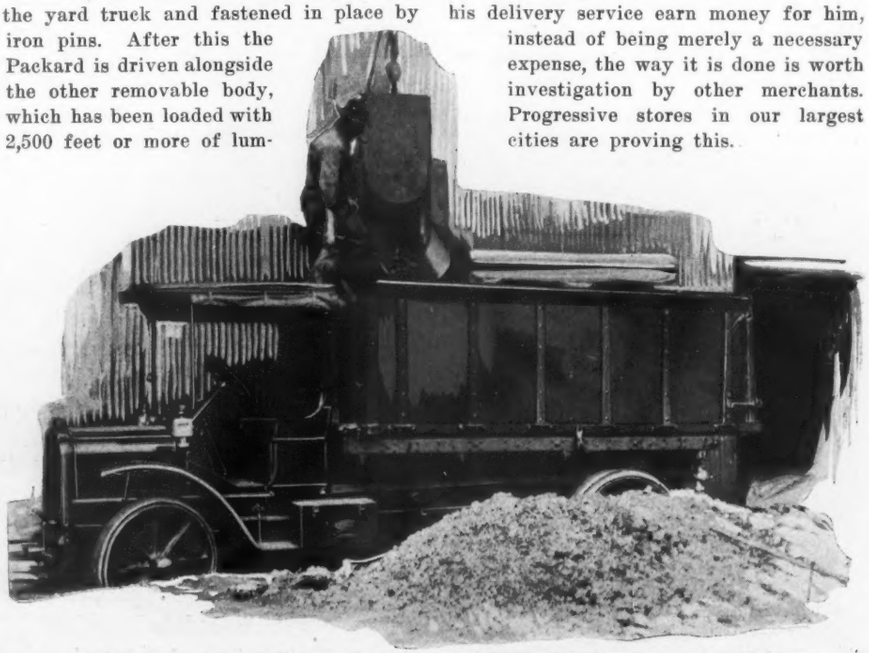
So far so good, but the company faced a problem in how to transfer these bodies from and to the motor truck, which resulted in the building of a truck, the sole duty of which is to be drawn through the yards for loading purposes and which has a skeleton body the same height as the motor truck. The motor truck also has a skeleton body. There are five shoes under the removable carrying body, three of which slide upon lubricated grooves and the other two act as guides. Iron eye-bolts are placed in both bodies.

The operation of this idea consists in the Packard, fitted with a removable body which is empty, driving alongside the yard truck, after which two sets of blocks and tackles are attached to the eye-bolts of the removable body and the yard truck and by means of a lever near the front wheel of the motor truck and a drum 10 inches long and 8 inches in diameter at the sides, the removable body is pulled to the yard truck and fastened in place by iron pins. After this the Packard is driven alongside the other removable body, which has been loaded with 2,500 feet or more of lumber, and the tackles, drum and lever are again put in operation, the load is shifted, pinned in place, and the truck is on its way, the entire process taking from 10 to 30 minutes according to the character of the load.

Great Time Saver

An idea of the time saved by this operation is had when it is known that it would take from 30 minutes to 3 hours to load the motor truck if the removable bodies were not used. More time is saved by having the other removable body loaded while the truck is hauling the first one to its destination. The load is dumped from the truck by means of a ratchet on the forward roller, which permits the load to slide off without vibration.

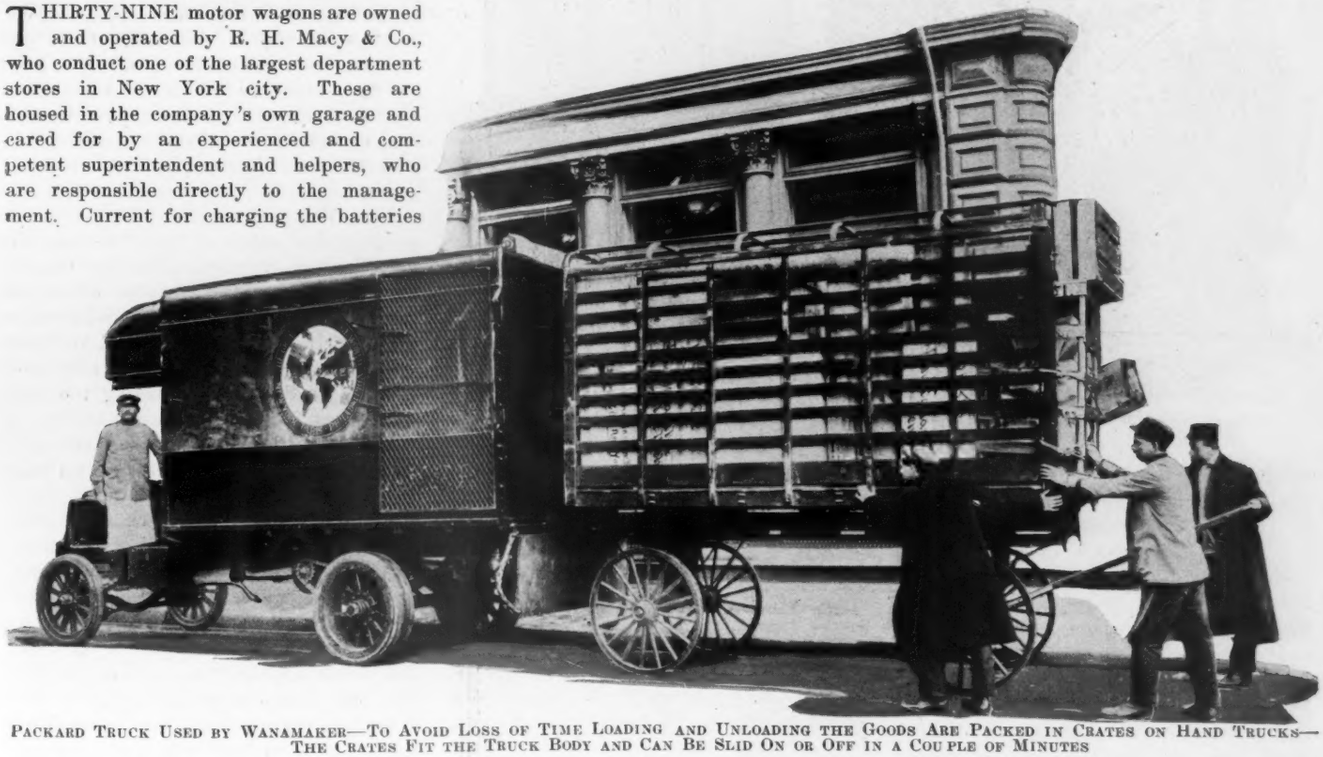
When a big retail merchant can make his delivery service earn money for him, instead of being merely a necessary expense, the way it is done is worth investigation by other merchants. Progressive stores in our largest cities are proving this.



WHITE TRUCK WITH SHEET METAL BODY INTENDED SPECIALLY FOR COAL HAULING

Large Department Store in New York Has Fleet of Thirty-Nine Cars in Operation From Which Maximum Service Is Secured Through System Developed by the Big Concern

THIRTY-NINE motor wagons are owned and operated by R. H. Macy & Co., who conduct one of the largest department stores in New York city. These are housed in the company's own garage and cared for by an experienced and competent superintendent and helpers, who are responsible directly to the management. Current for charging the batteries is supplied by the same engine room that generates the lighting current for the store. As a result, the machines have the best of care, are not overloaded or driven at excessive speeds, and the cost of operation is reduced to a minimum.



PACKARD TRUCK USED BY WANAMAKER—TO AVOID LOSS OF TIME LOADING AND UNLOADING THE GOODS ARE PACKED IN CRATES ON HAND TRUCKS—THE CRATES FIT THE TRUCK BODY AND CAN BE SLID ON OR OFF IN A COUPLE OF MINUTES

Many Wagon Sizes

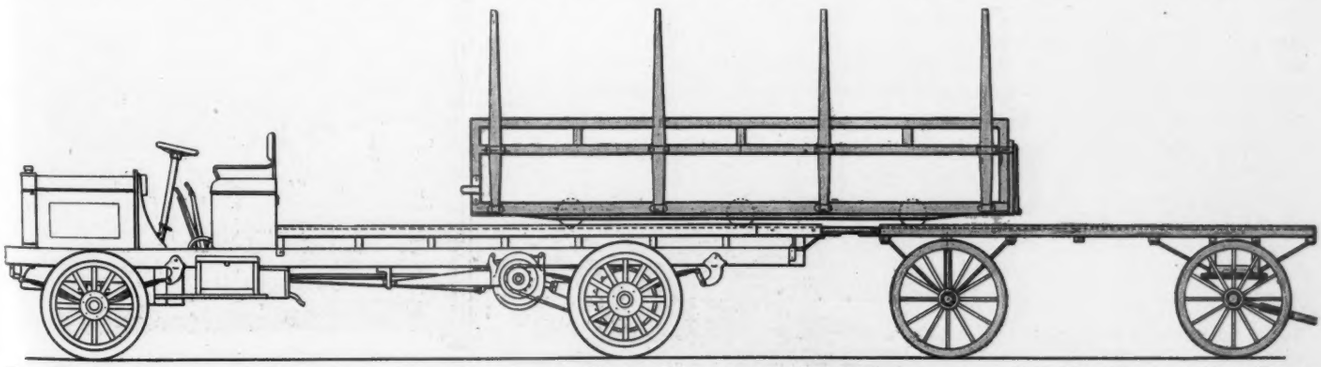
The power wagons have load capacities of 1 and 2 tons, and not only cover all of Greater New York, but run out into the suburbs, 20 miles or more from the store, to make daily deliveries of purchases. The performance of one of the wagons will show the possibilities of the service. One day it was driven to Morristown, N. J., covering 72 miles out and back, uphill and down, over macadamized roads. Forty-five stops were made for deliveries, and the machine returned to the store in New York at 9:30 p. m., two hours before a team of horses would return to the stable maintained in Newark, about 10 miles nearer Morristown, after serving the same territory.

The wagon is regularly worked, 14 and 15 or more hours a day, covering the longest and hardest suburban routes, and averages from 56 to 57 miles a day, on one charge. Express service by train is eliminated, deliveries are made more promptly, and a larger territory is covered than would be possible in the same time and at the same cost with horses. The natural result is an increase in trade.

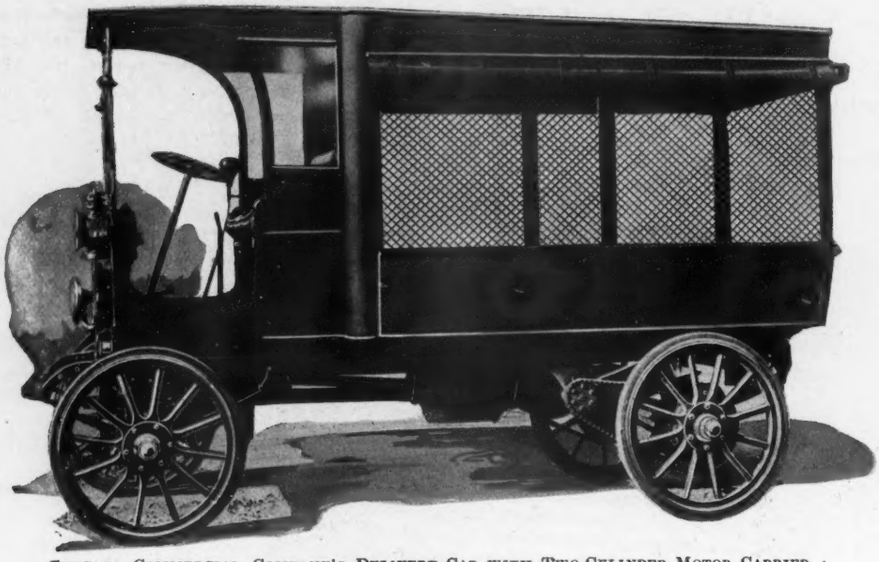
The retail dry goods house of James A. Hearn & Co., of New York, uses more than forty machines of various types and sizes. It also has its own garage and repair shop, and hires its own mechanics and drivers. The power wagons are put on the hardest suburban routes, but all start from and return to the store or central garage every day. One of the 1-ton-capacity wagons covers the Coney Island route regularly, traveling an average of 63 to 67 miles and making an average of 150 stops for deliveries of parcels to residences, sometimes running up to 300 deliveries. It leaves the store at 8 a. m. and gets back to the garage usually about 7 p. m. Unless there are an unusual number of deliveries the driver works alone. When this route was served with horse wagons, hampers of packages were shipped by express to Bath Beach, about midway of the route, where the wagon received the packages.

The Wanamaker Scheme

Ten 3-ton trucks are maintained by the John Wanamaker store in New York, which has one of the most unique and expeditious services in the world. These



THE PACKARD DEMOUNTABLE BODY—IT SLIDES ON TO A REGULAR TRUCK PLATFORM AND LOCKS THEREON WITH TWO DROP PINS—A HAND TRUCK CARRIES THE BODY WHEN IT IS BEING LOADED AND UNLOADED—THIS SAVES LOSS OF TIME LOADING AND UNLOADING AND INCREASES THE EARNING CAPACITY FOR SHORT HAULS



CHICAGO COMMERCIAL COMPANY'S DELIVERY CAR WITH TWO-CYLINDER MOTOR CARRIED UNDER DRIVER'S FLOOR BOARDS

trucks are unusually capacious and have removable inner bodies or crates mounted on rollers. Each crate fits snugly inside the regular closed body of the truck and completely fills it. Large elevators take the crate to the shipping room on any floor of the store, where the packages for any given section of the city are loaded into it, the operation requiring from 1 to 2 hours or more. When filled the crate, which is on a large hand truck, is taken down, run into the court and shoved into the motor truck. Then it is taken at a speed of 12 to 15 miles an hour to a sub-station in Harlem, the Bronx, East New York, or South Brooklyn. Here the inner body is withdrawn, an empty one put in its place, and the truck immediately returns to the store for another load. Horse-drawn wagons do the rest.

No time is lost by the motor truck at either end of the route in waiting for loads to be made up or removed. Ten to 15 minutes suffice for withdrawing one crate and substituting another. As many as 3,000 separate parcels have been carried in one load by one of these trucks. They work far into the night, often 20 hours out of 24, and average approximately 115 miles a day. The longest hauls are to Port Chester, 28 miles; to Nyack, 30 miles, and to New Brunswick, N. J., more than 30 miles. On one day before Christmas five loads of merchandise were hauled out to the Bronx station by one of these trucks, and these five loads kept twenty-five route wagons busy with local deliveries throughout the day.

Pie Concern Uses Trucks

Electrics Being Tried By Chicago Concern for Delivery of Pastry---Ten 10-Ton Rigs in Coal Service

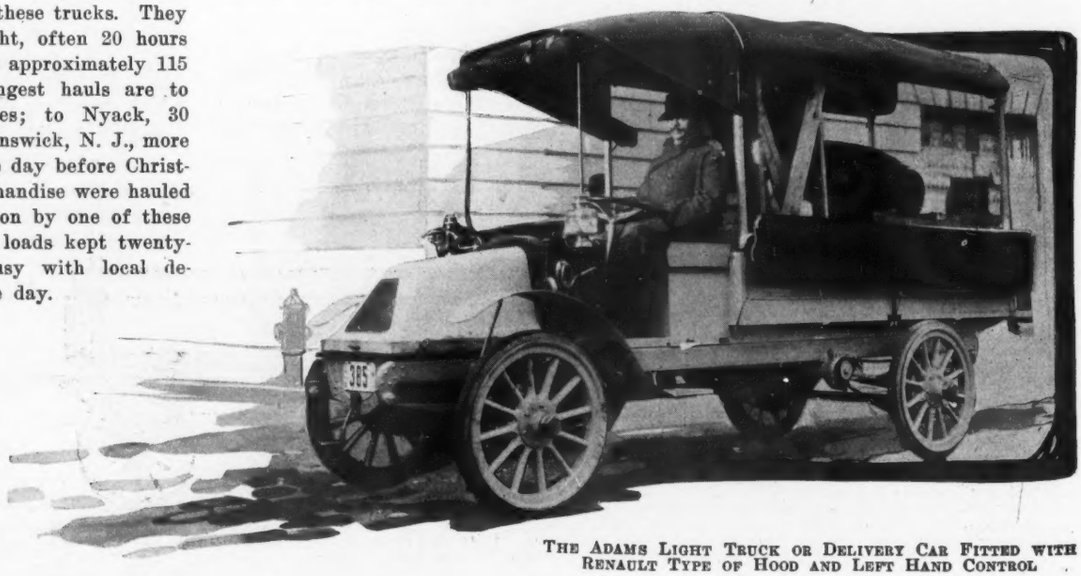
AN unusual use for motor service is found in Chicago, where the Case & Martin Co., a concern which has almost a monopoly of the pie business in the city, uses six electrics for delivering its product. Pies are perishable articles, anyway, but so far no complaint has been received as to damaged goods because of this motor service, for the pies are carefully stowed away in racks at each side. One man to a car is all that is required.

Two of these machines have a capacity of 1,200 pies each; two others carry 500 pies each, while another one is used for emergency work; that is, delivering pies on rush telephone orders. The sixth car is kept in service for the sole purpose of carrying the empty shipping cases.

As yet the motor service with the Case & Martin Co. is in an experimental stage, and so far the company has not yet fully determined as to its capabilities. It started out first with a battery that did not give sufficient mileage, but now a new thin-plate battery has been secured which is giving better results, so that the company is hopeful of eventually using only motor trucks in its delivery system. Each truck is supposed to operate on a route that formerly required four horses to operate, each team working every other day, and the daily journey is from 30 to 40 miles.

New York boasts of a fleet of dreadnoughts that make a formidable appearance lined up for work. This fleet consists of ten 10-ton Hewitt trucks which are used by Burns Brothers, big wholesalers of coal. It has been discovered that this motor service effects a great saving of time in loading and unloading the coal. The system consists in loading the trucks from overhead chutes in the yards and then emptying them from side chutes when the trucks reach their destination.

The south park commission in Chicago, always aggressive and modern, has taken most kindly to the motor car and in addition to keeping several machines in service for the use of its officials it also has a motor snow plow and a motor sprinkler. The latter has been in service for some time and has demonstrated that it is a great improvement over the horses. There is a sprinkler at both ends of the machine, and traveling at a rate of 10 or 12 miles an hour it is possible to cover considerable territory in comparatively little time. The snow plow was put in service this winter, when the commissioners decided that the boulevards should be swept after each snow storm in order to prevent the roads being rutted by the motor cars keeping in one path, as has been the case in previous winters when there has been a heavy fall of snow. This machine not only plows its way through the snow, but has a couple of revolving brushes at the rear which assist in getting the snow off the roads.



THE ADAMS LIGHT TRUCK OR DELIVERY CAR FITTED WITH RENAULT TYPE OF HOOD AND LEFT HAND CONTROL

Marshall Field's System

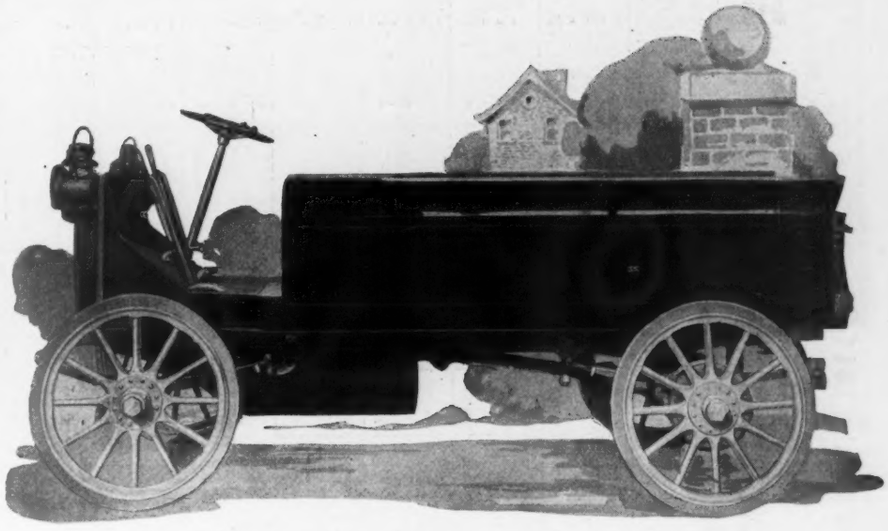
Chicago Concern Has Evolved Most Remarkable Scheme for Delivering Goods to Purchasers in Windy City

MARSHALL Field & Co. have in Chicago one of the most remarkable delivery systems in the world. Inside the store and on the road every device is used to expedite delivery. It is a common saying that when a purchase is made at Field's the goods often reach the house before the customer can get home. From the different selling floors the parcels are dropped down a spiral chute to the basement. Here they slide out upon traveling belts that carry them past sorters, who pick them out and throw them upon other belts for different sections of the city. Other sorters take them from these belts and throw them into large trunks behind them. The trunks are numbered to correspond with certain blocks or areas in the different sections of the city, and they stand on hand trucks.

As soon as a trunk is full the top is closed and locked, the truck is run out to the loading platform and the trunk put aboard a large 3-ton truck with others.

Trunk Delivery System

In from half an hour to an hour the truckload of trunks reaches a distributing station in an outlying part of the city, where the trunks are thrown off and a load of empties taken on. Horse-drawn wagons now take the trunks and, without removing the packages, they start out on the delivery routes. Each trunk has been filled with packages for a certain street or block, so that it is not necessary to open more than one or two at a time. From the time they leave the store until they are removed in the delivery wagon not a package is handled individually. So none can get lost or slip from the wrapping, and the wrapping can not get soiled.



VAN DYKE LIGHT DELIVERY CAR IN ITS 1911 FORM

Formerly the trunks for suburban places, such as Evanston and Oak Park, were hauled by horse-drawn trucks to the railroad stations and sent by express, to be distributed locally by light wagons. But since the equipment of motor trucks was installed the railroad service has been discontinued to such nearby suburbs, and the store depends entirely upon the power wagons.

There is only one improvement that can be suggested. That is, the use of light motor delivery wagons in place of the horse outfits at the distributing stations. Undoubtedly this has been considered already by the management and will follow in time. As it is, one of the 3-ton trucks is able to keep from one dozen to twenty of the horse wagons busy constantly with local work.

Rapid Service Maintained

Just one little story in this connection will show how much a delivery system becomes a real asset to a store. A Chicago business man went to Field's one day and ordered a mahogany desk for his study at home in Rogers Park. He did not know the exact length of the space it was to occupy, but asked the store to send it out and if it fitted he would keep it. Upon returning to his office about 2 o'clock the purchaser received a telegram calling him out of the city. He at once got Field's on the telephone and said that if they could get the desk to his house before 4 p. m. he would take it, otherwise not to make the delivery. Taking a train for Rogers Park about an hour later, he arrived home at 3:30, and found that the desk was in the house.

In addition to their truck service, Marshall Field & Co. maintain a fleet of light delivery wagons which really are Packard pleasure cars with panel top bodies. These machines are designed wholly for rapid delivery service, such as carrying out small purchases which necessarily must be rushed. It is remarkable the time these machines made and it often is the case that the purchaser arrives home to find that the bundles are already there.

THE UNITED STATES MOTOR EXPRESS DELIVERY CAR, A TYPICAL TYPE OF THE PRESENT DAY WITH EXPRESS BODY AND MOTOR LOCATED UNDER THE FLOOR BOARDS

Motor Specifications of Commercial Cars Made by Independent Manufacturers for the 1911 Season

Table No.	NAME	BODY	Load, Lbs.	Price	Chassis Model	Load Platform in Feet	Total Len'th in Ft.	No. Cyl.	Bore	Stroke	H. P. A.L.A.M.	Cyl. Vol.	Cyl. Type	Cyl. How Cast	Loc. of Valves	COOLING			IGNITION					CARBURETER		Motor Lubrication
																Type	Circulation	Radiator	Type	System	Magneto	Current Source	Control	Design	Gasoline Feed	
1	Abresch	Optional	4,000	$2,700	A	12 x5½	16	4	4½	5	28.9	283.6	T	Pairs	Opp.	W	P	T	H-T	Dual	Opt	M & B	Hand	Stromberg	G	C
2	Abresch	"	6,000	3,000	B	14½x5½	18	4	4½	5	28.9	283.6	"	"	"	"	"	"	"	"	"	"	"	"	"	"
3	Abresch	"	8,000	3,500	C	15½x6	19½	4	4½	5½	36.1	389.9	"	"	"	"	"	"	"	"	"	"	"	"	"	"
4	Acorn	"	1,000	....	H	6½x3½	11½	2	5	4	20.0	157.1	L	Sep	Side	"	T	"	"	Sing	....	AK&C	"	Schebler	"	"
5	Adams	"	1,500	1,600	B	6 x4	13	2	3¾	5	11.3	110.5	"	Enbloc	R Side	"	P	"	"	"	Eise'n	M & G	"	Own	"	"
6	Adams	"	3,000	2,400	A	9 x4	15	4	3¾	5	22.5	220.9	"	"	"	"	"	"	"	"	"	"	"	"	"	"
7	American	"	4,000	3,000	M	10 x4½	18½	4	4⅛	5½	38.0	410.6	T	Pairs	Opp.	"	"	"	"	Doub	Bosch	M & B	"	Schebler	"	"
8	American	"	6,000	3,750	L	12 x5	..	4	4⅛	5½	38.0	410.6	"	"	"	"	"	"	"	"	"	"	"	"	"	"
9	American	"	10,000	4,500	....	13 x5½	..	4	5¼	6	44.1	519.5	"	Sep	"	"	"	"	"	"	"	"	"	"	"	"
10	American Standard	"	2,000	1,400	1-Ton	12 x4½	15	2	5	5	20.0	196.4	H	"	Head	"	"	"	"	Dual	Volta	M & C	"	Kalamazoo	"	P
11	American Standard	"	4,000	1,900	2-Ton	12 x4½	15	2	5½	5½	24.2	261.4	"	"	"	"	"	"	"	"	"	"	"	"	"	"
12	American Standard	"	6,000	2,700	3-Ton	15 x5½	18	4	4½	4	32.4	254.5	"	"	"	"	"	"	"	"	"	"	"	"	"	"
13	American Standard	"	10,000	3,500	5-Ton	16 x6½	19	4	5½	5½	48.4	522.7	"	"	"	"	"	"	"	"	"	"	"	"	"	"
14	American Standard	"	20,000	6,000	10-Ton	17 x7½	..	4	6½	6	61.5	796.3	"	"	"	"	"	"	"	"	"	"	"	"	"	"
15	Atterbury	"	1,500	1,600	K-20	5½x3½	13	4	3¾	4½	22.5	187.7	L	"	R Side	"	"	"	"	"	Heinze	"	"	Schebler	"	C
16	Atterbury	"	2,000	2,500	L-30	8½x4½	16	4	4½	4½	28.9	255.3	T	Pairs	Opp	"	"	"	"	"	"	"	"	"	"	"
17	Atterbury	"	4,000	3,000	N-40	11 x4½	19	4	4⅞	5½	36.1	389.9	"	Sep	"	"	"	"	"	"	"	"	"	"	"	"
18	Atterbury	"	6,000	3,500	M-50	12 x6	20	4	4⅞	5½	38.0	410.6	"	Pairs	"	"	"	"	"	"	"	"	"	"	"	"
19	Atterbury	"	10,000	4,500	O-70	15 x6	20	6	4⅜	5½	57.0	619.5	"	"	"	"	"	"	"	"	"	"	"	"	"	"
20	Avery	Platform	6,000	3,000	....	10½x4½	18	4	4¾	5	36.1	354.4	"	Sep	R Side	"	"	C	"	"	Eise'n	M & B	"	"	"	"
21	Beck	Delivery	1,500	850	....	.....	..	2	5	5	20.0	196.4	..	"	H & S	"	"	"	"	Sing	....	Bat	"	"	"	"
22	Beck	Optional	2,000	1,200	....	9 x4	14	2	5	5	20.0	196.4	..	"	"	"	"	"	"	"	....	"	"	"	"	"
23	Beck	"	3,000	1,500	E-212	9 x4½	16	2	5	5½	20.0	215.9	T	"	Opp	"	"	"	"	Doub	....	"	Fixed	"	"	M
24	Beck	"	4,000	1,800	F-226	10 x5	17	2	5	5½	20.0	215.9	"	"	"	"	"	"	"	"	....	"	"	"	"	"
25	Beck	"	10,000	2,300	5-Ton	12 x5	17	4	5½	5½	48.4	522.7	"	"	"	"	"	"	"	"	....	"	"	"	"	"
26	Blacker	Delivery	1,000	650	M	.....	..	2	4 1/16	4 1/16	13.2	105.3	H	"	H	A	..	....	"	Sing	....	"	Hand	"	"	"
27	Blacker	Optional	2,000	2,200	T	.....	..	4	4½	5½	27.3	280.6	L	Pairs	Side	W	P	T	"	"	Bosch	....	"	"	"	C
28	Blacker	"	6,000	3,300	S	.....	..	4	5	5	40.0	392.7	"	"	"	"	"	C	"	Doub	"	M & B	"	"	"	"
29	Brodesser	"	2,000	1,500	C-I	9 x4	14	4	4	4½	25.6	226.2	"	Enbloc	R Side	"	"	T	"	Dual	Remy	M & C	"	"	"	"
30	Brodesser	"	3,000	2,000	D-15	11 x4	16	4	4¼	5	28.9	283.6	"	Pairs	"	"	"	"	"	"	"	"	"	Stromberg	"	"
31	Brodesser	"	5,000	2,700	E-2	11½x4½	16½	4	4½	5	28.9	283.6	H	"	H	"	"	"	"	"	Bosch	M & C	"	Schebler	"	"
32	Brodesser	"	7,000	3,500	F-3	13 x4½	18½	4	4½	5	32.4	318.1	"	"	"	"	"	"	"	"	"	"	"	"	"	"
33	Carhartt Jr	Delivery	....	1,200	....	.....	..	4	4	4	25.6	201.1	L	"	L Side	"	"	"	"	"	Remy	"	"	"	"	"
34	Cass	Optional	3,000	1,950	....	8 x5	..	4	4	4½	25.6	226.2	"	Enbloc	R Side	"	T	"	"	"	Opt.	"	"	"	"	"
35	Champion	"	2,000	2,000	A	10 x5	14	4	3¾	5	22.5	220.9	"	"	"	"	"	"	"	Sing	B&S Ig	Bat	"	"	"	"
36	Champion	"	4,000	2,500	B	11 x5	14	4	4½	5	28.9	283.6	T	Pairs	Opp	"	P	"	"	Doub	Heinze	M & B	"	"	"	"
37	Champion	"	6,000	3,000	C	11 x5	15	4	4½	5½	36.1	389.9	"	"	"	"	"	"	"	"	"	"	"	"	"	"
38	Chase	"	1,000	900	D	6 x3½	12	3	3½	4	....	132.5	*	Sep	....	A	..	....	"	Sing	Bosch	....	Fixed	Holley	"	O
39	Chase	"	2 000	1,250	H	7 x4	13½	3	4½	4	....	160.3	"	"	....	"	..	....	"	"	"	....	"	"	"	"
40	Chase	"	2,000	1,400	K	7 x4	13½	3	4½	4	....	160.3	*	"	....	"	..	....	"	"	"	....	"	"	"	"
41	Chase	"	3,000	2,000	J	10 x4½	15	3	4½	5	....	232.6	*	"	....	"	..	....	"	"	"	....	"	"	"	"
42	Chicago Com. Car	"	2,000	1,500	P-16	7½x3½	..	2	5½	4½	22.0	205.6	L	"	Side	W	T	T	"	Doub	....	Bat	Hand	Schebler	"	C
43	Cino	Delivery	1,000	2,000	A	6½x3	..	4	4⅜	5	30.6	300.7	H	Pairs	"	"	P	"	"	Dual	Remy	M & C	"	Stromberg	P	"
44	Clark Delivery Car	"	1,500	1,750	1911	8 x4	13	4	3½	5	22.5	220.9	L	Enbloc	L Side	"	T	"	"	"	....	M & B	"	Marvel	G	"
45	Clark Power Wagon	Optional	1,500	.....	....	7½x4	..	2	5	5½	20.0	215.9	"	Sep	Side	"	"	"	"	"	U & H	M & C	Fixed	Breeze	"	M
46	Coleman	Delivery	1,200	1,150	A	8½x3½	11	2	4¾	5	18.0	177.2	H	"	H	A	..	....	"	Doub	Sp'd'f	Mag	Hand	Schebler	"	"
47	Commer	Optional	8,000	5,500	BrWat	12 x6½	18	4	4 3/16	5½	30.0	321.3	T	Pairs	Opp	W	P	T	"	"	Bosch	M & B	"	Own	"	C
48	Commer	"	10,000	6,000	Leeds	14 x7	21½	4	4⅝	5½	32.4	349.9	L	"	L Side	"	T	"	"	"	"	"	"	"	"	"
49	Commer	"	14,000	6,500	Man'ter	14 x7	22¼	4	4⅝	5½	32.4	349.9	"	"	"	"	"	"	"	"	"	"	"	"	"	"
50	Cortland	"	1,200	1,050	....	Opt.	Opt.	2	4¼	4¼	14.5	120.6	"	Sep	Top	A	..	....	"	Dual	Remy	M & C	"	Breeze	"	M
51	Cortland	"	1,200	1,100	....	"	"	2	4¼	4¼	14.5	120.6	"	"	"	W	T	T	"	"	"	"	"	"	"	"
52	Couple Gear	"	10,000	5,700	A-C	15 x6	18	4	5¼	6	44.1	519.5	T	"	Opp	"	P	C	"	"	Bosch	Mag	Fixed	Schebler	"	"
53	C. P. T.	"	1,500	1,000	1911	6½x3½	10½	2	5	4	20.0	157.1	L	"	Top	"	T	T	"	Sing	....	Bat	Hand	"	"	"
54	Crown	Delivery	1,000	1,075	A	6 x3½	12½	2	5¼	4	22.0	173.2	"	"	"	"	"	"	"	"	Remy	Mag	"	"	"	"
55	Crown	Optional	1,500	.....	....	.....	..	2	5¼	4	22.0	173.2	"	"	"	"	"	C	"	Dual	"	M & C	"	"	"	C
56	Day Utility	Delivery	.....	950	A	.....	..	4	3⅜	3⅜	18.3	120.8	..	Pairs	....	"	"	T	"	Sing	Bosch	Mag	"	"	"	"
57	Dayton	Optional	6,000	.....	K	12½x6	18	4	4⅜	5½	34.3	352.8	L	"	L Side	"	P	"	"	Dual	"	M & C	"	Stromberg	"	"
58	Decatur	"	2,000	2,000	H	5½x	..	4	4	4	25.6	201.1	"	Sep	"	"	"	"	"	Sing	Simms	Mag	Fixed	Schebler	"	"
59	Diamond-T	.....	10,000	2,500	....	12 x6	19½	4	5	5½	40.6	431.9	"	Pairs	"	"	"	C	"	Dual	Bosch	M & B	Hand	.....	"	"
60	Duryea	Optional	400	1,400	Tri-van	4½x2½	7	1	3¾	3¾	....	41.1	*	Sep	....	A	..	....	"	Sing	....	Cells	"	Optional	"	O

ABBREVIATIONS:—**Body:** When Body is Optional Price Usually Refers to Chassis Alone. **Cylinder Type:** T, T-Head; L, L-Head; H, Valves-in-Head; *2-cycle motor. **Cylinders, How Cast:** Sep, Separately; Pairs, in Pairs; Bloc, en Bloc. **Valve Location:** R. Side, Right Side; L. Side, Left Side; Opp, on Opposite Sides; H & S, Head and Side. **Cooling Type:** A, Air-Cooled; W, Water-Cooled. **Radiator:** C, Cellular or Honeycomb; T, Tubular. **Ignition:** H-T, High-Tension; L-T, Low-Tension; Ma-&-Brk., Make-and-Break. **Current Source:** M, or Mag, Magneto; B, or Bat, Storage Battery; C, or Cell, Dry Cells. **Gasoline Feed:** P, Pressure Feed; G, Gravity Feed. **Motor Lubrication:** C, Circulating System; M Mechanica Oiler; F, Fly-Wheel Circulating System; G, Gravity System; O, Oil Fed with Fuel; P, Compression Oiler.

Transmission and Running Gear Specifications of Independent Commercial Cars for the 1911 Season

Table No.	NAME	CHASSIS MODEL	TRANSMISSION							BRAKES		RUNNING GEAR							BEARINGS											
			CLUTCH		GEARSET			Drive	Car Drives Thru	Rear Axle	Service	Em.	Wheel Base	Front Tires	Rear Tires	Front Sp'gs	Rear Springs	Front Axle	Crankshaft		Camshaft		Gearset	Front Wh'ls	Rear Axle	Clutch Sp'dle	Clutch Thrust	Str'ng Knu'l	Str'ng Gear
			Type	Friction Surface	Type	No. Spds	Location												Type	No.	Type	No.							
1	Abresch	A	M.D.	S	Sel.	3	Amid.	C	R	Dead	Ext. J.S.	Int	126	36x3½	42x4	El	Plat	R	Plain	3	Plain	2	Ball	Ball	Ball	Plain	Ball	Ball	Ball
2	Abresch	B	"	"	"	3	"	"	"	"	"	"	132	36x4	42x5	"	"	"	"	3	"	2	"	"	"	"	"	"	"
3	Abresch	C	"	"	"	3	"	"	"	"	"	"	140	36x5	42x7	"	"	"	"	3	"	2	"	"	"	"	"	"	"
4	Acorn	H	....	....	Frict.	3	....	"	..	"	Int.	..	96	34x2½	36x2½	"	El	T	"	2	"	2	Plain	"	"	Roll	"	Plain	Plain
5	Adams	B	Cone	R	Sel.	3	Amid.	S	TR	Float	Ext	Int	104	32x	32x	½ El	½ El	I	"	2	"	2	Ball	Roll	Roll	Plain	..	..	..
6	Adams	A	"	"	"	3	"	C	R	Dead	Ext J S	"	120	34	34x	"	"	"	"	3	"	3	"	"	"	"	..	..	..
7	American	M	MD	S&B	"	3	"	"	"	"	J S	"	132	36x4	36x5	"	"	"	"	3	"	3	Roll	"	"	Ball	Ball	Roll	Plain
8	American	L	"	"	Plan	2	"	"	"	"	"	"	130	36x5	36x4*	"	½ Plat	"	"	3	"	3	"	"	"	"	"	"	"
9	American	.....	"	"	"	2	"	"	"	"	"	"	130	36x7	36x5*	"	"	"	"	3	"	3	"	"	"	"	"	"	"
10	American Standard*	1-Ton	Cone	S	"	2	J S	"	"	"	.....	..	102	34x2½	34x2½	Plat	Plat	T	"	2	"	2	....	Plain	Plain	..	..	..	..
11	American Standard*	2-Ton	"	"	"	2	"	"	"	"	.....	..	102	34x3	34x3	"	"	"	"	2	"	2	....	"	"	..	..	..	"
12	American Standard*	3-Ton	"	"	"	2	"	"	"	"	.....	..	108	36x4	36x4	"	"	"	..	..	..	..	Plain	"	"	Plain	..	Plain	"
13	American Standard*	5-Ton	"	"	"	2	"	"	"	"	.....	..	114	36x5	36x5	"	"	"	"	..	"	..	"	"	"	"	"	"	"
14	American Standard*	10-Ton	"	"	"	2	"	"	"	"	.....	..	120	36x8	36x8	"	"	"	"	..	"	..	"	"	"	"	"	"	"
15	Atterbury	K-20	"	L&S	Sel	3	Amid	"	"	"	Ext J S	Int	100	34x2½	34x2½	½ El	½ El	I	"	4	..	..	Roll	Ball	Ball	"	Roll	"	"
16	Atterbury	L-30	"	"	Prog	3	"	"	"	"	"	"	115	36x3½	36x3½	"	"	"	"	4	..	..	"	Roll	Roll	"	"	"	"
17	Atterbury	N-40	M D	S	Sel	3	"	"	"	"	"	"	138	36x3½	36x4	"	"	R	"	4	..	..	"	"	"	"	"	"	"
18	Atterbury	M-50	"	"	"	3	"	"	"	"	"	"	156	36x4	36x3½*	"	"	I	"	4	..	..	"	"	"	"	"	"	"
19	Atterbury	O-70	"	"	"	3	"	"	"	"	"	"	156	36x5	36x4*	"	"	"	"	5			"	"	"	"	"	"	"
20	Avery	.....	"	"	"	3	"	"	"	"	Int	..	140	x5	x4	"	"	R	"	5	Plain	3	"	"	"	Ball	B&P	"	
21	Beck	.....	Cone	....	"	3	....	S	..	Semi-F	.....	..	120	36x3½	36x3½	....	.....	..	B&R	..	....	..	B&R	B&R	B&R	B&R	B&R	B&R	B&R
22	Beck	.....	"	S	Plan	2	Amid	C	T	Dead	.....	..	120	36x3½	36x3½	Plat	Plat	R	Ball	4	Ball	4	Ball	"	Ball	Ball	Ball	"	"
23	Beck	E-212	M D	"	"	3	"	"	"	"	.....	..	120	36x5	36x5	"	"	"	"	4	"	4	"	Ball	"	"	"	Ball	Plain
24	Beck	F-226	"	"	"	3	"	"	"	"	.....	..	120	36x5	36x6*	"	"	"	"	4	"	4	"	"	"	"	"	"	"
25	Beck	5-Ton	"	"	"	3	"	"	"	"	.....	..	130	36x6	36x4*	"	"	"	"	4	"	4	"	"	"	"	"	"	"
26	Blacker	N	Cone B	....	Sel	2	"	"	R	Semi-F	Ext	..	86	30x3	30x3	El	El	T	Plain	2	..	..	....	Roll	Roll	..	..	Plain	"
27	Blacker	T	"	....	"	3	"	"	"	Dead	Ext J S	Ext	98	32x4	32x4	"	Plat	I	.....	..	..	..	....	"	"	..	..	"	"
28	Blacker	S	"	....	"	3	"	"	"	"	"	"	120	36x5	36x3½*	"	"	I					....	"	"	..	..	Roll	"
29	Brodesser	C-1	....	....	Frict	3	....	"	"	"	Ext	..	108	38x2	40x2	½ El	½ El	T	Plain	3	Plain	3	....	Plain	Plain	..	..	Plain	"
30	Brodesser	D-15	....	....	"	3	J S	"	"	"	Int	IntJS	130	34x3½	36x4	"	Plat	"	"	3	"	3	Plain	"	"	..	Ball	"	"
31	Brodesser	E-2	Cone	L&I	Sel	3	"	"	"	"	"	"	130	36x3½	36x4	"	"		"		"	3	Roll	Ball	Ball	Plain	"	Ball	Ball
32	Brodesser	F-3	"	"	"	3	"	"	"	"	"	"	140	36x4	36x3½*	"	"	..	"	5	"	3	"	"	"	"	"	"	"
33	Carhartt, Jr.	J	"	....	"	3	U M	S	S	Semi-F	Ext	Int	108	32x3½	32x3½	"	¾ El	I	"	3	"	3	Ball	"	Roll	"	"	Plain	B&P
34	Cass	.....	"	L	Prog	2	Amid	C	R	Dead	"	"	114	34x3	34x4	"	Plat	R	"	2	"	3	Roll	Roll	"	"	"	"	..
35	Champion	A	M D	S&B	Sel	3	R A	"	"	"	Ext J S	"	124	34x3½	34x3½	"	½ El	..	"	3	Roll	3	"	Ball	Ball	"	"	Ball	..
36	Champion	B	"	"	"	3	"	"	"	"	"	"	124	36x3½	36x4	"	Plat	..	"	3	Plain	2	Ball	"	B or R	"	"	"	..
37	Champion	C	"	"	"	3	"	"	"	"	"	"	124	34x4	36x5	"	"	..	"	3	"	2	"	"	Ball	"	"	"	..
38	Chase	D	....	....	Plan	2	Amid	"	"	"	Ext	..	100	x1¾	x2	El	El	R	"	4	..	..	"	"	"	..	..	Plain	Plain
39	Chase	H	....	....	"	2	"	"	"	"	"	Int	106	x2	x2	"	Plat	"	"	4	..	..	"	"	"	"	"	"	"
40	Chase	K	Cone	I&C	Sel	3	"	"	"	"	Ext J S	Ext	106	x2	x2	"	"	"	"	4	..	..	Roll	"	"	Roll	"	"	"
41	Chase	J	"	"	"	3	"	"	"	"	"	"	120	x3	x3½	"	"	"	"	4			"	"	"	"	"	"	"
42	Chicago Com. Car	P-16	"	S	Plan	2	"	"	"	"	Int	..	106	34x3	36x3½	½ El	El	"	"	2	Plain	3	"	"	"	Plain	"	"	"
43	Cino	A	M D	"	Sel	2	"	S	TR	Semi-F	Ext	Int	113	34x4	34x4	"	¾ El	I	"	3	"	3	Plain	Roll	Roll	Ball	"	"	B&P
44	Clark Delivery Car	1911	"	"	"	3	"	"	R	Float	Int	"	100	36x3	36x3	"	El	O	"	3	"	3	Ball	Ball	Ball	Plain	"	"	"
45	Clark Power Wagon	.....	Cone	....	"	2	"	"	"	Dead	Ext	..	102	x2½	x2½	..	.....	..	"	2	"	2	"	Roll	Roll	"	"	"	Plain
46	Coleman	A	M D	S&F	Plan	2	"	C	..	"	Int	J S	96	x2½	x2½	El	El	R	"	2	"	3	Plain	Ball	Ball	Ball	Ball	"	..
47	Commer	Br'water	Cone	L&I	Sel	3	"	"	R	"	"	Int	144	34x4	34x4*	½ El	½ El	"	Ball	3	Ball	2	Ball	"	"	"	"	"	Plain
48	Commer	Leeds	"	"	"	4	"	"	"	"	"	..	172	36x4½	40x4½*	..	.....	"	"	3	"	3	"	"	"	"	"	"	"
49	Commer	Man'ter	"	"	"	4	"	"	"	"	"	..	172	36x5½	40x5½*	..	.....	"	"	3	"	3	"	"	"	"	"	"	"
50	Cortland	.....	M D	S&F	Plan	2	"	"	T R	"	"	..	86	36x2½	36x2¼	El	Plat	"	Plain	2	Plain	2	B&R	"	"	"	"	"	Ball
51	Cortland	.....	"	"	"	2	"	"	"	"	"	..	86	36x2¼	36x2¼	"	"	"	"	2	"	2	"	"	"	"	"	"	"
52	Couple Gear*	A C	....	....	....	..	....	E	..	"	Ext	Elec	144	36x4	36x4*	½ El	½ El	B	"	5	"	3	....	Roll	....	..	..	"	Plain
53	C. P. T.	1911	M D	S	"	2	"	C	R	"	.....	..	86	x2	x2	½ El	El	R	"	2	"	3	B&R	Ball	....	Roll	Ball	"	Ball
54	Crown	A	"	"	Sel	3	"	"	"	"	J S	R W	104	36x2½	36x2½	El	"	"	"	2	"	2	Ball	"	Ball	Plain	"	"	Plain
55	Crown	.....	"	"	....	3	....	"	..	"	Ext J S	Ext	104	36x	36x	"	"	..	"	2	"	2	"	"	"	"	"	"	"
56	Day Utility	A	Cone	L&I	Sel	2	U M	S	T	Semi-F	.....	Int	100	30x3	30x3½	½ El	½ El	I	"	5	..	..	....	"	....	..	..	..	..
57	Dayton	K	M D	S&B	"	3	J S	C	R	Dead	Ext J S	"	136	36x5	36x4*	"	Plat	"	"	3	Plain	..	Roll	Roll	Roll	Plain	Ball	Roll	Ball
58	Decatur	H	"	"	"	3	Amid	"	"	"	Int J S	"	129	32x3	32x3½	"	"	"	"	5	"	3	Ball	Ball	Ball	Ball	"	Plain	"
59	Diamond-T	.....	"	S	"	3	"	"	"	"	.....	..	144	34x4	36x4*	"	½ El	..	"	3	"	3	"	Roll	Roll	Plain	"	Roll	Plain
60	Duryea	Tri-van	....	....	Frict	2	....	S	..	"	Ext	..	60	26x3	26x3	Coil	.....	C	"	2	..	..	....	Ball	Ball	Ball	..	Plain	Ball

*Car Drives on all Four Wheels. †Front-wheel drive.

ABBREVIATIONS:—**Clutch Type:** M D, Multiple Disk; Con B, Contracting Band; Exp B, Expanding Band; Float. R., Floating Ring; Exp. S.. Expanding Shoe. **Clutch Surface:** L, Leather; S, Steel; I, Iron; B, Bronze; F, Fabric; R, Raybestos; T, Thermoid; A, Asbestos; C, Cork. **Gearset Type:** Sel, Selective; Plan, Planetary; Prog, Progressive; Frict, Friction. **Gearset Location:** Amid. Amidships; U M, In Unit with Motor; R A, On Rear Axle; F. A., On Front Axle. **Drive:** S, Shaft; C, Chain; E. Electric; G, Gear. **Car Drives Through:** T, Torsion Tube; T R, Torsion Rod; R, Radius Rods; S, Springs. **Rear Axle:** Float, Floating; Semi-F, Semi-Floating. **Brakes:** Em. Emergency; E or Ext. External Contracting; I, or Int, Internal Expanding; R W, On Rear Wheels; J S, On Jack Shaft; Trans, On Transmission; R A, On Rear Axle; Elec, Electric. **Wheels:** *Wheels are dual. **Springs:** El, Elliptic; Plat, Platform. **Front Axle:** I, I-Beam; C, Channel; T ,Tubular R, Rectangular B, Built Up; O, Oval Cross-Section; D. T., Double Truss; S. Solid. **Bearings:** B, Ball; P, Plain R. or Roll, Roller.

Motor Specifications of Commercial Cars Made by Independent Manufacturers for the 1911 Season

Table No.	NAME	BODY	Load, Lbs.	Price	Chassis Model	Load Platform in Feet	Total Len'th in Ft.	No. Cyl.	Bore	Stroke	H. P. A.L.A.M.	Cyl. Vol.	Cyl. Type	Cyl., How Cast	Loc. of Valves	COOLING			IGNITION					CARBURETER		Motor Lubrication
																Type	Circulation	Radiator	Type	System	Magneto	Current Source	Control	Design	Gasoline Feed	
61	Duryea	Delivery	750	$ 700	Del'y	6¾x3½	10½	2	3½	3½	....	82.8	*	Sep	.....	A	..	.....	H-T	Sing	K-W	Cells	Hand	Optional	G	O
62	Economy	Optional	800	850	1	5 x3½	10½	2	4½	4½	18.0	158.1	H	"	Head	"	..	.....	"	"	....	"	"	Schebler	"	M
63	Economy	Express	1,000	1,000	3	7 x3½	12	2	4½	4½	18.0	158.1	"	"	"	"	..	.....	"	Doub	....	"	"	"	"	"
64	Economy	Optional	2,000	1,325	2	7 x3½	10½	2	4½	4½	18.0	158.1	"	"	"	"	..	.....	"	Sing	....	Bat	"	"	"	"
65	Ewing	Delivery	1,000	.....	A	6½x4	13	4	4½	4½	30.6	285.6	L	Pairs	R Side	W	P	C	"	"	Bosch	Mag.	Fixed	"	"	"
66	Federal	Optional	2,000	2,100	C	8 x5½	..	4	4½	4½	28.9	255.3	"	"	L Side	"	"	T	"	"	"	"	"	.....	"	C
67	Frontenac	"	6,000	3,500	1911	12½x6½	17	4	5	5½	40.0	451.6	"	"	"	"	"	"	"	Dual	....	M & B	Hand	Stromberg	"	"
68	Frontenac	"	8,000	3,650	1911	12½x6½	17	4	5	5½	40.0	451.6	"	"	"	"	"	"	"	"	....	"	"	"	"	"
69	Geneva	Delivery	1,000	1,350	C	6 x3½	12	2	5½	4½	21.0	185.2	"	Sep	Top	"	"	"	"	Sing	....	Mag	"	Schebler	"	M
70	Gaylord Utility	"	1,000	1,250	U	.....	..	4	4	5	25.6	251.3	H	Pairs	....	"	"	"	"	Dual	Remy	"	"	.....	"	C
71	Gleason	Express	1,000	1,050	10	6 x3½	..	2	4½	4	18.0	141.8	..	Sep	....	"	T	"	"	"	"	M & C	"	Schebler	"	M
72	Gleason	"	1,000	1,250	20	5 x3½	..	2	4½	4	18.0	141.8	H	"	"	"	"	"	"	"	"	"	"	"	"	"
73	Gramm	Optional	2,000	1,800	1	8 x4	12½	4	4	5	25.6	251.3	L	Enbloc	Side	"	"	C	"	Doub	Simms	M & B	"	"	"	C
74	Gramm	"	4,000	2,500	2	10½x4½	14½	4	4½	4½	28.9	269.4	"	Pairs	R. Side	"	P	"	"	"	"	"	"	"	"	"
75	Gramm	"	6,000	3,500	3	12 x5	16½	4	5	5	40.0	392.7	"	"	"	"	"	"	"	"	"	"	"	"	"	"
76	Gramm	"	10,000	4,500	5	13 x5	16½	4	5	5	40.0	392.7	"	"	....	"	"	"	"	"	"	"	"	"	"	"
77	Great Eagle	Ambulance	.....	3,500	1224	7 x3½	..	4	..	..	....	.....	..	..	.....	"	"	"	"	Dual	....	"	.....	.....	.....	.....
78	Harder	Optional	3,000	2,250	C	Opt.	15	4	4	4	25.6	201.1	L	Pairs	R. Side	"	"	"	"	"	Remy	"	Hand	Schebler	G	C
79	Harder	"	8,000	3,650	B	.....	..	4	4	5	25.6	251.3	"	"	"	"	"	"	"	"	"	"	"	"	"	"
80	Hart-Kraft	"	1,000	.....	B	5½x4½	11½	2	4½	4	16.2	127.3	"	Sep	Top	"	T	T	"	Doub	Split'f	M & C	"	"	"	"
81	Hart-Kraft	"	1,500	.....	Bx	6½x3½	11½	2	4½	4	16.2	127.3	"	"	"	"	"	"	"	"	"	"	"	"	"	"
82	Hart-Kraft	"	3,000	.....	C	7½x3½	15	4	4½	4½	28.9	269.4	"	Enbloc	Opp	"	P	"	"	Sing	Bosch	Mag	Fixed	"	"	"
83	Hart-Kraft	"	5,000	.....	D	10 x5	17½	4	4½	4½	28.9	269.4	"	"	"	"	"	"	"	"	"	"	"	"	"	"
84	Hatfield	"	1,000	850	.....	5½x3½	10	2	4½	4	18.0	141.8	"	Sep	Side	A	..	.....	"	"	"	"	"	Breeze	"	"
85	Herreshoff	Delivery	.....	950	25	.....	..	4	3½	3½	18.3	134.2	"	Enbloc	L Side	W	T	T	"	"	"	"	"	Own	"	"
86	Independent	"	.....	800	H	.....	..	4	5½	2½	42.0	206.3	"	"	Side	"	..	.....	"	"	.....	Opt	.....	"	"	O
87	I. H. C.	"	1,000	.....	.....	5½x3	..	2	5	5	20.0	196.4	H	Sep	Head	A	..	.....	"	Dual	Heinze	M & C	Hand	Schebler	"	C
88	Johnson	"	1,000	1,500	Del'y	4½x4	..	4	4½	4½	28.9	255.3	L	Pairs	Side	W	P	C	"	Sing	....	AK&C	Gov	Stromberg	"	"
89	Johnson	Optional	1,500	1,600	¾-Ton	8½x3½	12½	4	4½	5½	32.4	334.0	"	"	"	"	"	"	"	"	....	"	"	"	"	"
90	Johnson	"	3,000	2,000	1-1½Ton	9½x4	..	4	4½	4½	28.9	255.3	"	"	"	"	"	"	"	"	....	"	"	"	"	"
91	Johnson	"	6,000	2,500	2-3-Ton	10½x4½	..	4	4½	5½	32.4	334.0	"	"	"	"	"	"	"	"	....	"	"	"	"	"
92	Johnson	"	10,000	3,200	4-5-Ton	12½x5½	17	4	5	5½	40.0	431.9	"	"	L Side	"	"	"	"	"	....	"	"	"	"	"
93	Kato	Stake	6,000	3,500	H	12 x6	15½	4	4½	5	36.1	354.4	"	"	"	"	"	T	"	"	Remy	M & C	Hand	Schebler	"	M
94	Kearns	Delivery	1,000	1,100	A-2	5 x3	11½	2	4½	5	....	159.1	*	Sep	....	"	T	"	"	"	....	AK&C	"	"	"	O
95	Kearns	"	1,000	1150	A-3	5 x3	11½	3	4	4	....	150.9	*	"	....	A	..	.....	"	"	....	"	"	"	"	"
96	Kelley	Optional	5 000	.....	2-Ton	Opt	Opt	4	4½	5½	30.6	308.2	H	"	Opp	"	..	.....	"	Dual	Bosch	Mag	"	Breeze	"	C
97	Kelley	"	7,000	.....	3-Ton	"	17	4	4½	5½	30.6	308.2	"	"	"	"	..	.....	"	"	"	"	"	"	"	"
98	Klinekar	"	1,250	.....	2-16	6 x4	10	2	4½	4½	16.2	135.2	L	"	Side	W	T	T	"	Doub	....	M & C	"	Schebler	"	M
99	Lauth-Juergens	Express	2,000	.....	F	11 x4½	15	2	5	5	20.0	196.4	"	"	"	"	"	C	"	Opt	....	"	Fixed	"	"	"
100	Longest	Stake	10,000	4,000	A	16 x6	23	4	5	5½	40.0	431.9	T	Pairs	Opp	"	P	T	"	Dual	....	"	Hand	Stromberg	"	"
101	Martin	Delivery	1,000	.....	E	5 x3½	13	2	4½	5	16.2	159.1	L	Sep	Side	"	T	"	"	Doub	....	Mag	.....	.....	"	"
102	Marquette	Optional	2,000	1,650	A	8¼x4	..	2	5½	4	22.0	173.2	..	"	.....	"	"	"	"	Sing	Bosch	"	Hand	Schebler	"	"
103	Marquette	"	3,000	1,950	C	9 x5	..	4	4½	4½	27.3	240.5	L	Enbloc	L Side	"	"	....	"	"	"	"	"	"	"	C
104	Mais	"	3,000	2,750	A	8¼x4	..	4	3½	5½	24.0	247.6	T	Pairs	Opp	"	P	C	"	Dual	....	"	Gov	Rayfield	"	"
105	Mais	"	4,000	2,750	A-S	11 x5	..	4	3½	5½	24.0	247.6	"	"	"	"	"	"	"	"	....	"	"	"	"	"
106	Merit	Express	1,000	1,000	B	6½x3½	11½	2	4½	4½	18.0	168.4	L	Sep	Side	A	..	.....	"	Opt	....	Cells	Hand	Schebler	"	"
107	Moeller	Optional	10,000	4,500	B	.....	18½	4	4½	5	32.4	318.1	"	"	L Side	W	P	T	"	Dual	Bosch	M & B	"	Stromberg	"	"
108	Monitor	Express	2,000	1,500	1911	7 x3½	10	2	5½	4½	22.0	205.7	H	"	Head	"	T	"	"	"	Remy	"	"	Schebler	"	M
109	Oliver	Optional	1,200	.....	A	6 x3½	..	2	5	5	20.0	196.4	L	"	Side	"	"	"	"	Sing	....	Mag	"	Stromberg	"	"
110	Oliver	"	2,000	2,300	71-A	8 x4	..	2	5	5	20.0	196.4	"	"	"	"	"	"	"	"	....	"	"	"	"	"
111	Penn-Unit	"	1,500	.....	A-1	6¾x3½	11½	2	5	5	20.0	196.4	"	"	"	"	"	C	"	"	Bosch	"	"	"	"	"
112	Ranger	Express	1,500	Opt.	E-F-G	6 x3	12	2	5	4	20.0	157.1	H	"	Head	"	"	"	"	"	....	Bat	"	Kingston	"	"
113	Rogers	Delivery	600	800	B	4 x3	10½	2	4½	4	18.0	141.8	L	"	Side	A	..	.....	"	"	Bosch	Mag	Fixed	Heitger	"	"
114	Rovan	"	1,500	1,500	B-24	6 x4	12½	2	5½	4½	22.0	194.8	"	"	"	W	T	T	"	Doub	Mea	M & B	Hand	Stromberg	"	C
115	S. & S.	Optional	6,000	3,500	1911	12 x6	18½	4	5	6	40.0	471.2	H	"	Head	"	P	C	"	Dual	....	M & C	Gov	Schebler	"	"
116	Saurer	"	10,000	5,000	L	14 x7	19½	4	4½	5½	30.6	330.7	T	Pairs	Opp	"	"	"	"	Sing	Eise'n	Mag	Hand	Own	P	M
117	Schacht	Delivery	1,000	975	D	5 x3½	..	2	5½	4½	21.0	185.7	L	Sep	Side	"	T	"	"	Doub	Bosch	M & C	"	Schebler	G	"
118	Schurmeier	Optional	1,500	1,800	C	7 x3½	..	2	4½	5	....	248.5	*	Enbloc	.....	"	P	"	"	Sing	Mea	Mag	"	Carter	"	"
119	Seits	"	4,000	2,800	2-Ton	12 x5½	16	4	4½	5	32.4	318.1	L	Pairs	L Side	"	"	T	"	"	Remy	"	"	Schebler	"	C
120	Seits	"	6,000	3,500	3-Ton	12 x6	17	4	5	5	40.0	392.7	"	"	"	"	"	"	"	"	"	"	"	"	"	"

ABBREVIATIONS:—Body: When Body is Optional Price Usually Refers to Chassis Alone. **Cylinder Type:** T, T-Head; L, L-Head; H, Valves-in-Head; *2-cycle motor. **Cylinders, How Cast:** Sep, Separately; Pairs, in Pairs; Bloc, en Bloc. **Valve Location:** R. Side, Right Side; L. Side, Left Side; Opp, on Opposite Sides; H & S, Head and Side. **Cooling Type:** A, Air-Cooled; W, Water-Cooled. **Radiator:** C, Cellular or Honeycomb; T, Tubular. **Ignition:** H-T, High-Tension; L-T, Low-Tension; Ma-&-Brk., Make-and-Break. **Current Source:** M, or Mag, Magneto; B, or Bat, Storage Battery; C, or Cells, Dry Cells. **Gasoline Feed:** P, Pressure Feed; G, Gravity Feed. **Motor Lubrication:** C, Circulating System; M, Mechanical Oiler; F, Fly-Wheel Circulating System; G, Gravity System: O, Oil Feed with Fuel; P, Compression Oiler.

Transmission and Running Gear Specifications of Independent Commercial Cars for the 1911 Season

Table No.	NAME	CHASSIS MODEL	TRANSMISSION								BRAKES		RUNNING GEAR						BEARINGS										
			CLUTCH		GEARSET			Drive	Car Drives Thru	Rear Axle	Service	Em.	Wheel Base	Front Tires	Rear Tires	Front Sp'gs	Rear Spr'gs	Front Axle	Crankshaft		Camshaft		Gearset	Front Wh'ls	Rear Axle	Clutch Sp'dle	Clutch Thrust	Str'ng Knu'l	Str'ng Gear
			Type	Friction Surface	Type	No. Spds	Location												Type	No.	Type	No.							
61	Duryea	Delivery	....	....	Frict.	2	U M	S	..	Dead	Ext	..	84	x1⅛	x1½	½ El	½ El	I	Plain	4	....	..	Roll	Ball	Ball	....	....	Plain	Plain
62	Economy	1	M D	S	Plan	2	"	C	..	"	Int	..	86	x1½	x1¼	El	El	R	"	2	Plain	3	Plain	"	"	P'ain	Plain	"	"
63	Economy	3	....	....	..	..	....	"	..	"	"	..	100	x2	x2	"	"	"	"	2	"	3	"	"	"	"	"	"	"
64	Economy	2	M D	S&F	Plan	2	U M	"	..	"	"	..	100	x2½	x2½	El	El	"	"	2	"	3	"	"	"	"	"	"	"
65	Ewing	A	"	I&B	Sel	3	J S	"	R	"	"	Int	106	x4	x4½	½ El	½ El	I	"	3	"	3	B&P	"	"	Ball	"	Ball
66	Federal	C	Cone	L	"	3	"	"	"	"	"	"	110	36x3½	36x3½	"	"	"	"	3	"	3	Roll	Roll	Roll	"	"	"	Plain
67	Frontenac	1911	"	C L&I	"	3	Amid	"	"	"	Ext J S	"	122½	36x5	36x4½*	"	"	"	"	3	"	3	"	B&R	Ball	"	"	"	"
68	Frontenac	1911	"	"	"	3	"	"	"	"	"	"	122½	36x5	36x4½*	"	"	"	"	3	"	3	"	"	"	"	"	"	"
69	Geneva	C	M D	F&S	Plan	2	....	"	..	"	Int	..	96	x2	x2½	"	El	R	"	2	"	2	Ball	Ball	"	....	....	"	"
70	Gaylord Utility	U	"	S	Sel	3	R A	S	S	Semi-F	Int&Ext	Ext	112	32x3½	32x3½	"	Plat	"	"	3	"	3	Roll	"	Roll	Ball	Ball	"	"
71	Gleason	10	"	S&B	"	3	Amid	"	R&S	Float	.....	..	96	36x2	36x2	"	El	I	"	2	"	3	Plain	"	B&R	Plain	"	"	"
72	Gleason	20	"	"	"	3	"	"	"	"	.....	..	96	36x2	36x2	"	"	"	"	2	"	3	"	"	"	"	"	"	"
73	Gramm	1	"	S	"	3	U M	C	R	Dead	Int J S	Int	90	34x3½	34x3½	"	½ El	R	"	2	"	3	Roll	Roll	Roll	Roll	"	"	Ball
74	Gramm	2	"	"	"	3	Amid	"	S	"	"	"	124	36x4	36x4	"	"	"	"	3	"	3	"	"	"	Plain	"	"	"
75	Gramm	3	"	"	"	4	"	"	"	"	"	"	124	36x5	36x4*	"	"	"	"	3	"	3	"	"	"	..	"	Roll	"
76	Gramm	5	"	"	"	4	"	"	"	"	"	"	130	36x5	40x5*	"	"	"	"	3	"	3	"	"	"	Roll	"	"	"
77	Great Eagle	1224	....	....	....	..	....	..	..	.....	.....	..	130	36x4½	36x4½	..	.....	I	....	..	....	..	....	....	....	....	..	....	..
78	Harder	C	Cone	S&L	Sel	3	Amid	C	R	Dead	Int	Int	100	36x4	36x4	..	.....	"	Plain	3	Plain	3	Ball	Ball	Ball	Plain	Ball	Ball	Plain
79	Harder	B	"	"	"	3	"	"	"	"	"	J S	103	36x4	36x3½*	..	.....	"	"	3	"	3	"	"	"	Roll	..	"	"
80	Hart-Kraft	B	M D	S	Plan	2	U M	"	..	"	.....	..	90	34x2½	34x2½	El	El	R	Ball	2	"	2	....	"	Roll	..	Plain	"	"
81	Hart-Kraft	Bx	"	"	"	2	"	"	..	"	.....	..	90	34x3	34x3	"	"	"	"	2	"	2	....	"	"	..	"	"	"
82	Hart-Kraft	C	"	"	Sel	3	Amid	"	..	"	Ext	IntJS	120	34x3½	36x4	½ El	½ El	"	Plain	3	"	3	B&R	"	Ball	Ball	Ball	"	"
83	Hart-Kraft	D	"	"	"	3	"	"	"	"	"	"	140	34x4	38x3½*	"	"	"	"	3	"	3	"	"	"	"	"	"	"
84	Hatfield	.....	....	....	Frict	..	U M	"	R&S	Live	"	..	88	35x4	35x4	El	El	"	"	2	"	3	....	Plain	Roll	..	..	..	..
85	Herreshoff	25	M D	S	Sel	3	"	S	T	Semi-F	"	Int	98	32x3	32x3	½ El	½ El	I	"	2	"	3	Plain	Ball	B&R	Plain	Ball	Plain	Plain
86	Independent	H	....	....	Frict	2	....	C	R	Dead	R W	..	95	x1½	x1½	El	½ El	T	Ball	2	Roll	2	....	B&R	"	..	"	"	"
87	I. H. C.	.....	Con B	F&I	Clutch	2	U M	"	"	"	R A	R W	90	41x1½	45x1½	"	El	R	Plain	2	Plain	2	Plain	Roll	....	....	..	"	"
88	Johnson	Delivery	Cone	L&S	Sel	3	Amid	S	Tor R	Float	Int	Int	112	32x3½	32x3½	½ El	½ El	I	"	3	"	4	Ball	Ball	Ball	Plain	Ball	"	"
89	Johnson	¾-Ton	"	"	"	3	"	"	T&R	"	"	"	112	34x3	34x3	"	"	"	"	3	"	4	"	"	"	"	Plain	Plain	"
90	Johnson	1½-Ton	"	"	"	3	"	C	..	Dead	"	J S	96	34x3½	34x3½	"	"	"	"	3	"	4	"	"	"	"	"	"	Ball
91	Johnson	2-3-Ton	"	"	"	3	"	S	T&R	Float	"	..	108	36x4	36x4	"	"	"	"	3	"	4	"	"	"	"	"	"	Plain
92	Johnson	4-5-Ton	"	L&I	"	3	"	C	R	Dead	R W	R W	132	36x5	36x3½*	"	"	"	"	3	"	4	"	Plain	Plain	"	Ball	Plain	"
93	Kato*	H	"	"	"	3	"	S	T&R	Float	Int	Int	120	34x5	34x5	"	Plat	"	"	3	"	3	Roll	B&R	B&R	Ball	"	"	Plain
94	Kearns	A-2	....	....	Frict	..	....	C	R	Dead	"	..	100	x2	x2	..	.....	R	"	3	..	..	....	Ball	Ball	..	..	Ball	Ball
95	Kearns	A-3	....	....	"	..	....	"	"	"	"	..	100	x2	x2	..	.....	"	"	3	..	..	....	"	"	..	..	"	"
96	Kelley	2-Ton	M D	S	Sel	4	Amid	"	..	"	J S	R W	136	36x4	38x5	½ El	½ El	I	"	3	Plain	3	Ball	Roll	Roll	Ball	Ball	Roll	"
97	Kelley	3-Ton	"	"	"	4	"	"	..	"	"	"	136	36x4	38x5	"	"	"	"	3	"	3	"	"	"	"	..	"	"
98	Klinekar	2-16	Con B	F&S	Plan	2	"	"	R	"	.....	..	86	36x3	36x3	"	El	R	"	2	"	2	Plain	"	"	"	..	Plain	Plain
99	Lauth-Juergens	F	M D	S	Sel	3	"	"	"	"	Int	Ext JS	104	32x3	32x3½	"	"	"	"	3	"	2	"	Ball	Ball	Plain	Plain	Ball	Ball
100	Longest	A	Cone	....	"	4	"	"	"	"	"	Int	172	36x4	36x4*	"	½ El	I	"	3	"	3	Roll	Roll	Roll	"	Ball	Roll	"
101	Martin	E	Float R	I	Plan	2	U M	"	"	"	Int&Ext	IntExt	92	x2½	x2½	El	El	..	"	3	....	..	....	"	"	..	....	..	Plain
102	Marquette	A	M D	S	"	2	Amid	"	..	"	Int	..	96	x2½	x3	Plat	Plat	S	"	2	Plain	2	Roll	Ball	Ball	..	Roll	Ball	..
103	Marquette	C	"	"	"	2	"	"	..	"	"	..	106	x3½	x4	"	"	"	"	2	"	2	....	"	"	..	"	"	Ball
104	Mais	A	Exp Shoe	B&I	Prog	3	U M	G	T	"	Ext	Ext	112	36x3½	36x5	½ El	½ El	T	Ball	3	"	3	Ball	Roll	Roll	..	Ball	Roll	Roll
105	Mais	A-S	"	"	"	3	"	"	"	"	"	"	124	36x3½	36x5	"	"	"	"	3	"	3	"	"	"	..	"	"	"
106	Merit	B	....	....	Frict	4	Amid	C	R	"	R W	R W	88	35x2	35x2	El	El	I	Plain	2	"	2	....	Plain	Plain	Ball	"	Plain	..
107	Moeller	B	M D	B&S	Sel	3	"	"	..	"	Int	Int	138	36x5	36x5*	½ El	½ El	"	"	5	"	5	Roll	Roll	Roll	"	"	Roll	Ball
108	Monitor J.	1911	Cone	T	"	3	"	S	T	Semi-F	R W	"	100	33x2½	34x3	"	El	"	"	4	"	2	....	Ball	"	Plain	"	Plain	"
109	Oliver	A	M D	S	Plan	2	U M	"	"	Float	Ext Tr.	Ext	102	38x2½	38x2½	"	½ El	"	"	2	"	2	B&P	Roll	"	..	..	"	Plain
110	Oliv	71-A	"	"	"	2	"	"	"	"	"	"	102	38x2½	38x2½	"	"	"	"	2	"	2	"	"	"	..	..	"	"
111	Penn-Unit	A-1	"	B&S	Sel	3	J S	C	R	Dead	Int	Int	90	36x2½	40x2½	"	Plat	S	"	2	"	2	Ball	Ball	Ball	Ball	Ball	"	"
112	Ranger	E-F-G	"	S	Plan	2	Amid	"	"	"	.....	..	92	36x2	36x2	½ El	El	R	"	2	"	..	"	"	"	Plain	Plain	"	"
113	Rogers	B	....	....	Frict	..	"	"	"	"	Int	..	90	x1½	x2	Plat	"	I	"	2	"	2	"	Roll	Roll	..	Ball	"	"
114	Rovan†	B-14	M D	S	Sel	3	F A	S	T	"	"	..	104	x3½	x3½	¾ El	"	D T	"	2	"	2	Roll	"	"	Ball	"	Ball	Ball
115	S. & S.	1911	Cone	L&C	"	3	Amid	C	R	"	Ext JS	Int	156	34x4	34x4*	½ El	½ El	I	"	5	"	5	"	"	"	Plain	"	Roll	Plain
116	Saurer	L	"	L&I	"	4	"	"	"	"	Trans	"	153	36x5	42x5*	"	"	R	Ball	3	"	3	Ball	Ball	Ball	Ball	"	Plain	B&P
117	Schacht	D	"	S&T	Plan	2	"	"	"	"	Int	..	103	32x3½	32x3½	"	El	S	Plain	2	"	2	....	Roll	Roll	..	"	"	Plain
118	Schurmeier	C	"	L	Sel	2	"	"	..	"	"	Int	96	36x3	40x3	"	½ El	T	"	3	....	..	Roll	"	"	Plain	Ball	"	Ball
119	Seits	2-Ton	....	....	Frict	..	"	"	R	"	Ext	..	118	34x4	34x2½*	"	Plat	I	"	3	Plain	..	"	"	"	..	..	"	"
120	Seits	3-Ton	....	....	"	..	"	"	"	"	"	..	124	36x5	36x3½*	"	"	"	"	3	"	..	"	"	"	..	..	"	"

*Car Drives on all Four Wheels. †Front wheel drive.

ABBREVIATIONS:—**Clutch Type:** M D, Multiple-Disk; Con B, Contracting Band; Exp B, Expanding Band; Float. R, Floating Ring: Exp. S., Expanding Shoe. **Clutch Surface:** L, Leather; S, Steel; I, Iron; B, Bronze; F, Fabric; R, Raybestos; T. Thermoid; A, Asbestos; C, Cork. **Gearset Type:** Sel, Selective; Plan, Planetary; Prog, Progressive; Frict, Friction. **Gearset Location:** Amid, Amidships; U M, In Unit with Motor; R A, On Rear Axle: F. A.: On Front Axle. **Drive:** S, Shaft; C, Chain; E, Electric; G. Gear. **Car Drives Through:** T, Torsion Tube; T R, Torsion Rod; R, Radius Rods; S, Springs. **Rear Axle:** Float, Floating; Semi-F, Semi-Floating. **Brakes:** Em, Emergency; E or Ext, External Contracting; I, or Int, Internal Expanding; R W, On Rear Wheels; J S, On Jack Shaft; Trans, On Transmission; R A, On Rear Axle; Elec, Electric. **Wheels:** *Wheels are dual. **Springs:** El, Elliptic; Plat, Platform. **Front Axle:** I, I-Beam; C, Channel; T, Tubular; R, Rectangular; B, Built Up; O, Oval Cross-Section: D. T., Double Truss: S, Solid. **Bearings:** B, Ball; P, Plain; R, or Roll, Roller.

Motor Specifications of Commercial Cars Made by Independent Manufacturers for the 1911 Season

Table No.	NAME	BODY	Load, Lbs.	Price	Chassis Model	Load Platform in Feet	Total Len'th in Ft.	No. Cyl.	Bore	Stroke	H. P. A.L.A.M.	Cyl. Vol.	Cyl. Type	Cyl., How Cast	Loc. of Valves	COOLING			IGNITION					CARBURETER		Motor Lubrication
																Type	Circulation	Radiator	Type	System	Magneto	Current Source	Control	Design	Gasoline Feed	
121	Sternberg	Optional	3,000	$1,985	1-Ton	9 x5	14½	2	5½	5	24.2	237.6	L	Sep	Side	W	T	T	H-T	Sing	Bosch	Mag	Gov	Schebler	G	C
122	Sternberg	"	4,000	2,400	1½-2-Ton	10 x5½	15½	2	5½	5	24.2	237.6	"	"	"	"	"	"	"	"	Opt	"	"	"	"	"
123	Sternberg	"	8,000	3,500	3-4-Ton	14 x6	18	4	5½	8	44.1	660.1	"	Pairs	H & S	"	"	"	"	Dual	Bosch	M & B	"	"	"	"
124	Sullivan	"	800	Opt	20-30-40	5 x3½	10	2	4¼	4	14.5	113.5	H	Sep	Head	"	"	"	"	Sing	.....	Cells	Hand	"	"	M
125	U. S.	"	2,000	2,000	A	7½x4	11	2	5¼	4½	22.0	194.8	L	"	Top	"	"	"	"	"	.....	AK&C	"	"	"	P
126	U. S.	"	3,000	2,250	B	9 x4	13	2	5½	4½	22.0	294.8	"	"	"	"	"	"	"	"	.....	"	"	"	"	"
127	Universal	Platform	6,000	3,200	3-Ton	12½x6	..	4	4	5½	25.6	276.5	..	Pairs	.....	"	P	C	"	Dual	Bosch	M & B	.....	Own	.....	C
128	Utility	Optional	2,000	2,000	B	9 x5	14	4	4½	5	28.9	283.6	T	"	Opp	"	"	T	"	"	Split f	M & C	Hand	Optional	G	"
129	Utility	"	6,000	3,500	C	14 x6	17	4	4½	5½	36.1	389.9	"	"	"	"	"	"	"	"	"	"	"	"	"	"
130	Vandyke	Delivery	1,000	850	....	6 x3	10½	2	4½	6	16.2	170.9	H	Sep	Head	"	"	"	"	Sing	S-X	"	"	Schebler	"	M
131	Veerac	Optional	1,000	850	1911	7 x3	11½	2	4	4	....	100.6	*	"	.....	A	..	.....	"	Doub	.....	Mag	"	Own	"	O
132	Victor	"	1,500	1,650	....	7 x3½	..	4	3⅜	4½	20.3	175.5	..	..	..	W	P	.....	"	.....	.....	.....	.....	.....	.....	.....
133	Wagenhals	"	1,000	750	3-wheel	6 x3½	10	2	5	4	20.0	157.1	L	Sep	Side	"	T	T	"	Sing	.....	Bat	Hand	Schebler	G	M
134	Warren-Detroit	Express	1,000	1,300	11	5 x3½	12½	4	4	4½	25.6	226.2	"	Enbloc	R Side	"	P	"	"	Doub	Bosch	M & C	Fixed	Optional	"	C
135	Webster	Delivery	1,500	850	....	6 x3½	11	2	4½	4	16.2	127.3	..	"	Top	A	..	.....	"	Sing	....	B & C	Hand	Schebler	"	M
136	Whitesides	Optional	1,500	1,2?5	1911	7 x3½	12½	4	4	4	25.6	201.1	L	"	L Side	W	T	T	"	Dual	Split'f	Cells	"	Marvel	"	C
137	Wilcox	"	2,000	2,300	I	10 x4	15	4	4½	4½	28.9	255.3	"	Pairs	Side	"	P	"	"	"	Bosch	M & B	"	Own	"	"
138	Wilcox	"	3,000	2,500	H	14 x7	16½	4	4½	4½	28.9	255.3	"	"	"	"	"	"	"	"	"	"	"	"	"	"
139	Wilcox	"	6,000	3 000	G	16 x8	..	4	4½	4½	28.9	255.3	"	"	"	"	"	"	"	"	"	"	"	"	"	"

ABBREVIATIONS:—**Body:** When Body is Optional Price Usually Refers to Chassis Alone. **Cylinder Type:** T, T-Head; L, L-Head; H, Valves-in-Head; *2-cycle motor. **Cylinders, How Cast:** Sep, Separately; Pairs, in Pairs; Bloc, en Bloc. **Valve Location:** R. Side, Right Side; L. Side, Left Side; Opp, on Opposite Sides; H & S, Head and Side. **Cooling Type:** A, Air-Cooled; W, Water-Cooled. **Radiator:** C, Cellular or Honeycomb; T, Tubular. **Ignition:** H-T, High-Tension; L-T, Low-Tension; Ma-&-Brk., Make-and-Break. **Current Source:** M, or Mag, Magneto; B, or Bat, Storage Battery; C, or Cells, Dry Cells. **Gasoline Feed:** P, Pressure Feed; G, Gravity Feed. **Motor Lubrication:** C, Circulating System; M, Mechanical Oiler; F, Fly-Wheel Circulating System; G, Gravity System; O, Oil Fed with Fuel; P, Compression Oiler.

Transmission and Running Gear Specifications of Independent Commercial Cars for the 1911 Season

Table No.	NAME	CHASSIS MODEL	TRANSMISSION							BRAKES		RUNNING GEAR						BEARINGS									
			CLUTCH		GEARSET			Drive	Car Drives Thru	Rear Axle	Service	Em.	Wheel Base	Front Tires	Rear Tires	Front Sp'gs	Rear Springs	Front Axle	Crankshaft		Camshaft		Gearset	Front Wh'ls	Rear Axle	Clutch Sp'dle	Clutch Thrust	Str'ng Knu'l	Str'ng Gear
			Type	Friction Surface	Type	No. Spds	Location												Type	No.	Type	No							
121	Sternberg	1-Ton	....	....	Frict	..	Amid	C	R	Dead	Int	J S	102	34x3½	36x3½	½ El	½ El	R	B&R	2	Plain	4	Roll	Roll	Roll	...	...	Plain	Ball
122	Sternberg	1½-2-Ton	M D	B&S	Clutch	3	"	"	"	"	"	"	Opt	34x3½	36x4	"	"	"	"	2	"	4	"	"	"	Ball	Ball	"	"
123	Sternberg	3-4 Ton	"	"	"	3	"	"	"	"	"	"	"	36x5	36x4*	"	"	"	"	2	"	4	"	"	"	"	"	"	"
124	Sullivan	20-30-40	....	....	Plan	2	U M	"	"	"	Ext	Trans	90	x1½	x1½	El	¾ El	"	Plain	2	"	2	Plain	Ball	Ball	Plain	Plain	"	"
125	U. S.	A	Cone	S&R	Clutch	3	Amid	"	"	"	J S	Int	100	34x2½	36x3	½ El	El	"	"	2	"	2	Ball	Roll	Roll	"	Ball	"	"
126	U. S.	B	Cone	S&R	Sel	3	Amid	"	"	"	J S	Int	118	34x3	36x3½	½ El	El	R	Plain	2	"	2	Ball	Roll	Roll	Plain	Ball	Ball	Plain
127	Universal	3-Ton	M D	S	"	3	J S	"	..	"	Int	Ext	132	36x5	36x4*	"	½ El	"	....	..	....	..	....	....	....	..	..	....	....
128	Utility	B	....	....	Frict	..	R A	"	"	"	"	..	110	40x3	40x3	"	Plat	"	Plain	3	Plain	3	Roll	Plain	Plain	..	..	Ball	Plain
129	Utility	C	....	....	"	..	"	"	..	"	"	..	136	42x5	42x5	"	"	"	"	3	"	3	"	"	"	..	..	"	"
130	Vandyke	.....	....	F&A	"	..	U M	S	..	Semi-F	"	Ext	86	32x3	32x3	"	¾ Plat	..	"	2	"	2	....	Ball	Roll	Roll	..	"	Ball
131	Veerac	1911	....	....	Plan	2	J S	C	..	Dead	"	..	82	x2	x2	¾ El	El	R	"	2	...	..	Plain	"	Ball	...	...	Plain	Plain
132	Victor	.....	M D	S	Sel	3	.....	...	...	.....	.....	...	..	34x2½	34x3	..	.....	...	...	...	...	...	....	Roll	Roll	Ball	Ball	...	...
133	Wagenhals	3-Wheel	Cone	"	Plan	2	Amid	C	..	Dead	Ext	..	80	30x3½	30x3½	..	.....	I	Plain	2	Plain	3	....	Ball	"	Plain	Plain	Plain	Plain
134	Warren-Detroit	11	"	L&I	Sel	3	"	S	S	Semi-F	"	Int	110	33x4	33x4½	½ El	¾ El	"	"	"	"	3	Plain	"	B&R	"	Ball	"	"
135	Webster	.....	....	....	Plan	2	J S	C	R	Dead	Int	..	93	x1½	x1½	"	El	R	"	2	"	3	Roll	"	Ball	Roll	Roll	Ball	"
136	Whitesides	1911	M D	S&B	"	2	Amid	"	S	"	R W	..	118	34x2½	34x2½	El	"	I	"	2	"	3	"	Roll	Roll	Plain	Plain	Plain	"
137	Wilcox	I	Cone	R	Sel	3	"	"	R	"	Ext J S	Ext	117	36x3	36x3½	"	Plat	"	"	3	"	3	"	"	"	"	Ball	"	"
138	Wilcox	H	"	"	"	3	"	"	"	"	"	"	117	36x3½	36x4	"	"	"	"	2	"	3	"	"	"	"	"	"	"
139	Wilcox	G	"	"	"	3	"	"	"	"	"	"	126	36x4	36x3½*	"	"	"	"	3	"	3	"	"	"	"	"	"	"

*Car Drives on all Four Wheels. †Front-wheel drive.

ABBREVIATIONS:—**Clutch Type:** M D, Multiple Disk; Con B, Contracting Band; Exp B, Expanding Band; Float. R, Floating Ring; Exp S., Expanding Shoe. **Clutch Surface:** L, Leather; S, Steel; I, Iron; B, Bronze; F Fabric; R, Raybestos T, Thermoid; A Asbestos; C, Cork **Gearset Type:** Sel, Selective; Plan, Planetary; Prog, Progressive; Frict, Friction. **Gearset Location:** Amid, Amidships; U M, In Unit with Motor; R A On Rear Axle; F. A., On Front Axle **Drive:** S, Shaft; C, Chain; E, Electric; G, Gear. **Car Drives Through:** T, Torsion Tube; T R, Torsion Rod; R, Radius Rods; S, Springs. **Rear Axle:** Float, Floating; Semi-F, Semi-Floating. **Brakes:** Em, Emergency; E or Ext, External Contracting; I, or Int, Internal Expanding; R W, On Rear Wheels; J S, On Jack Shaft; Trans, On Transmission; R. A., On Rear Axle; Elec, Electric. **Wheels:** *Wheels are dual. **Springs:** El Elliptic; Plat, Platform. **Front Axle:** I, I-Beam; C, Channel; T, Tubular; R, Rectangular; B, Built Up; C, Oval Cross-Section.; D T, Double Truss; S, Solid. **Bearings:** B, Ball; P, Plain; R, or Roll, Roller.

System Used In Maintaining Private Commercial Garage

VIEW OF INTERIOR OF MARSHALL FIELD & CO.'S COMMERCIAL GARAGE

MARSHALL Field & Co., of Chicago, who operate a big department store, not only maintain a fleet of motor cars, but also have erected a private garage, in which the machines are kept. In the fleet are fourteen Packard 3-ton trucks and a squad of light delivery wagons on Packard 30 chassis.

The garage is one large room, with no posts to interfere with handling the trucks. There is a basement at one end with drivers' lockers, lavatories, etc. Here also is the boiler room, the building being steam-heated. Water for washing the trucks is carried around both sides of the garage. The proper temperature is obtained by first mixing the hot and cold water in a large tank. The floor of the garage is spaced off with lines, to indicate where each truck must be left after its day's run. They are washed right where they stand, the entire floor of the garage being so laid that it forms one big washing table.

A supply of small parts is kept in a stock room on a balcony near the superintendent's office. Two 25-gallon chemical fire extinguishers and two box carts of soapstone serve as a protection against fire.

System of Superintendent

The superintendent is Roy Shuert, who got his truck education at the Packard factory. He has two mechanics on day work, and one on the night shift. Another man comes on at 10 a. m. and stays till the trucks are all in from the day's run. The night man has a helper, who, when he gets familiar with the trucks, is put on day work and taught to drive. Two washers are able to take care of all the trucks and cars housed in the garage. They work all night and have the trucks ready for the drivers in the morning.

Each truck is round-housed once a month. This is made possible by having an extra truck on hand, so that the regular service is not interfered with. The round-housing consists of as thorough an examination of the truck as is possible without tearing it down, and the making of any necessary adjustments or replacements to the working parts of the chassis and motor. In addition to the above work, each truck receives a complete overhauling every 6 months.

The condition of his truck is reported by the driver on a daily report card when he comes in from each day's run. No matter how slight the trouble, he makes a note of it. The cards are turned over to the head mechanic, who goes over them and makes a report to the superintendent. From this report, and a personal inspection of any truck that has had trouble, the superintendent can give instructions to the night mechanic as to what work should be done on this or that truck to get it in proper shape for the next day's service.

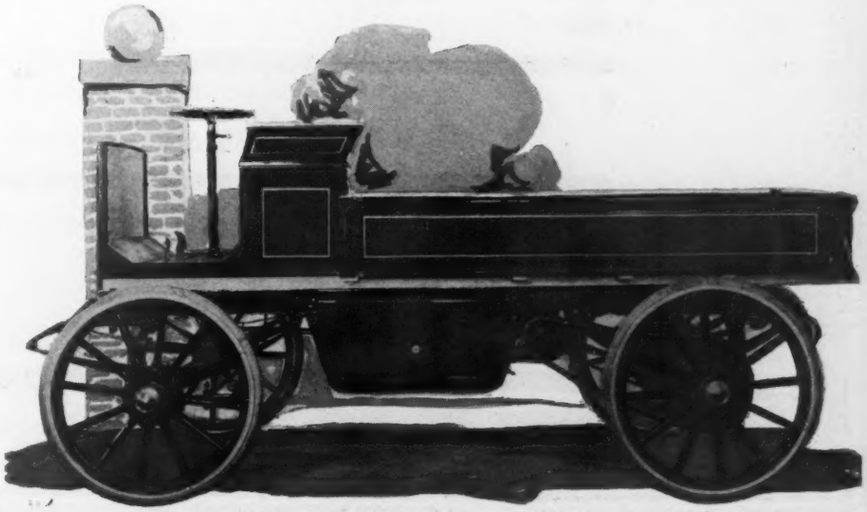
The night mechanic enters on the cards the time spent in doing the necessary work and the materials used. Both time and materials are charged against the truck.

The matter of lubrication of the trucks is definitely divided between the drivers and the night mechanic. All hand oiling, done with the oil cans, is up to the drivers. The night mechanic or his helper fill the oil tanks, grease cups, see that the gear housing, universal joints, etc., have the proper amount of oil or grease in them, and also fill the gasoline tanks.

Daily Report is Made

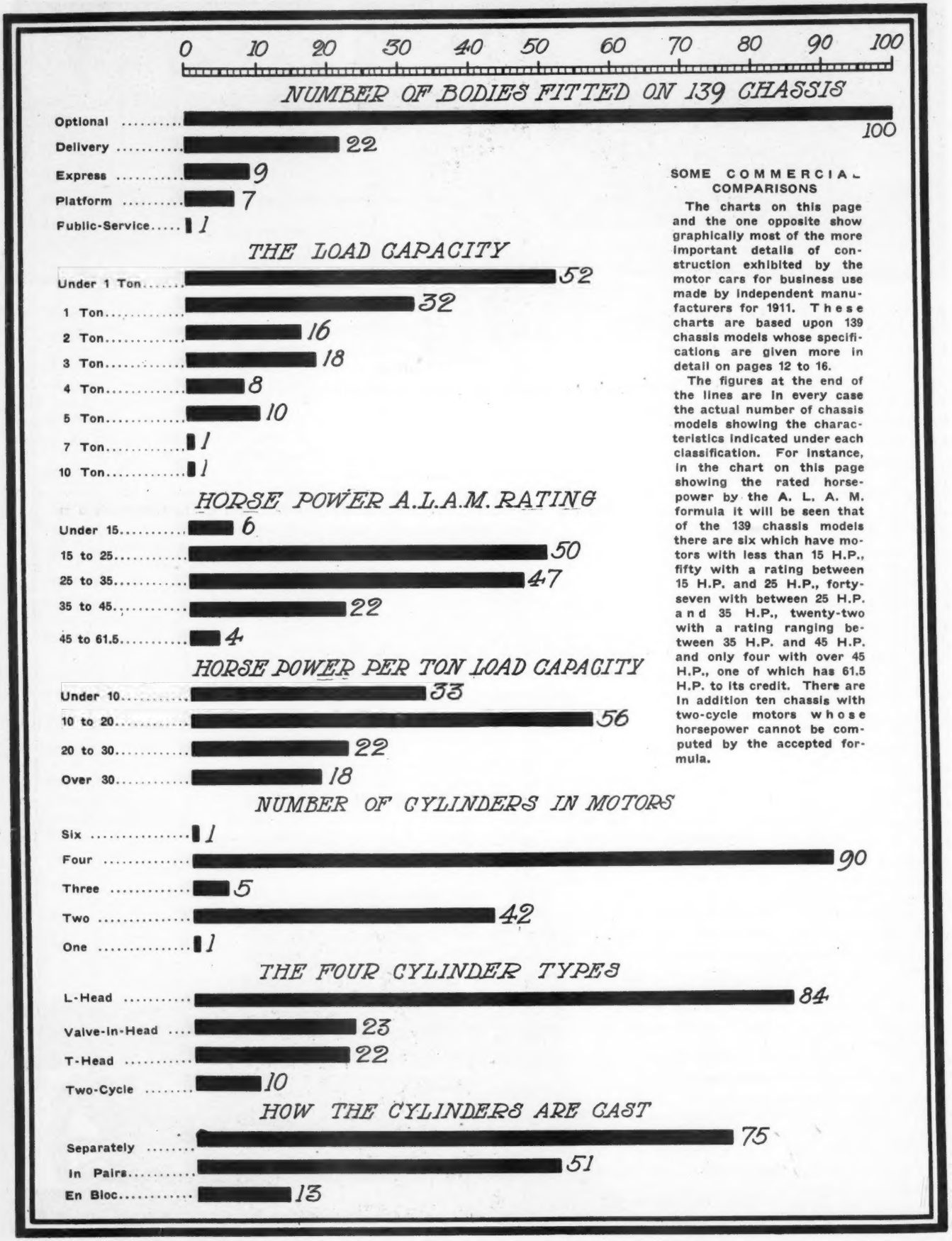
The exact amount of each lubricant is noted on the truck's daily report card and charged to the truck. Each truck is also charged with its proportion of overhead cost, depreciation, and the driver's wages. Thus Marshall Field & Co. know exactly what each individual truck is costing them. They know also what service they are getting from each truck, for a record is kept of mileage, time, stops, etc.

The truck's record is also the driver's record, and is the basis for a sort of merit system. The driver who takes the best care of his truck, and has the smallest amount of supplies, material and labor charged to it, is in line for any favor the company can show him, such, for instance, as being given the next new truck, or an advancement. The system serves to create a rivalry among the men in the Field service to make good.



LIGHT DELIVERY WAGON MANUFACTURED BY THE SCHMIDT BROS. CO.

Tendencies of the Independent Commercial Cars for 1911

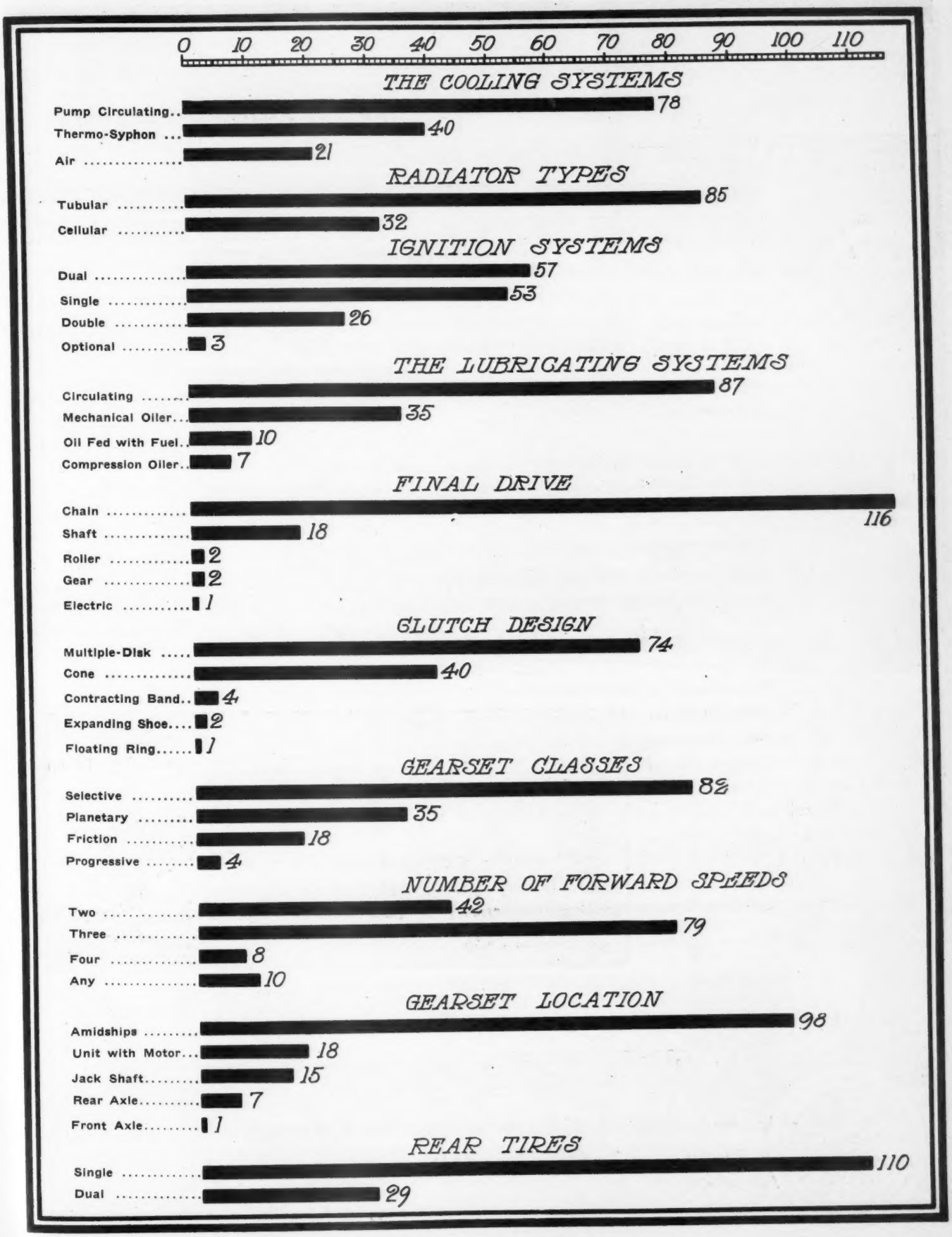


SOME COMMERCIAL COMPARISONS

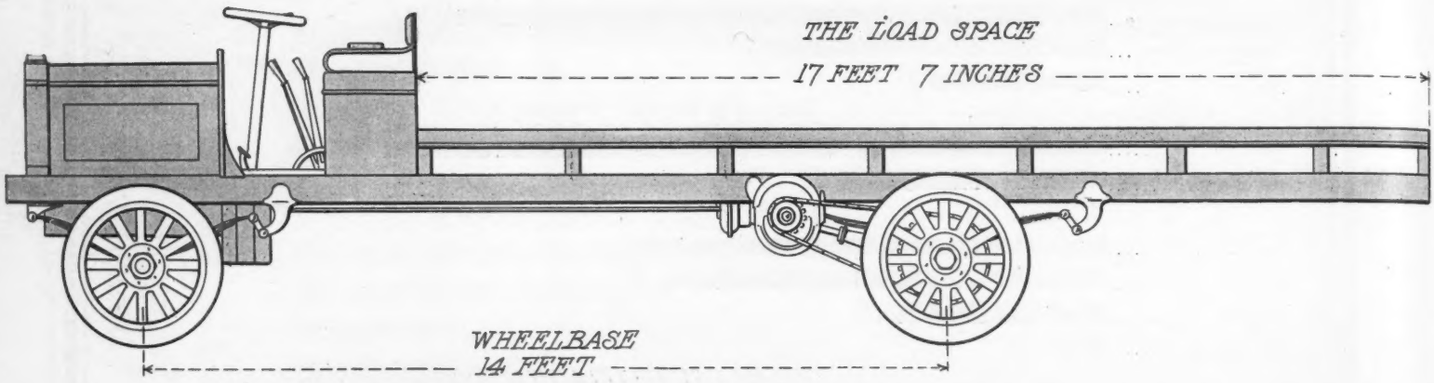
The charts on this page and the one opposite show graphically most of the more important details of construction exhibited by the motor cars for business use made by independent manufacturers for 1911. These charts are based upon 139 chassis models whose specifications are given more in detail on pages 12 to 16.

The figures at the end of the lines are in every case the actual number of chassis models showing the characteristics indicated under each classification. For instance, in the chart on this page showing the rated horsepower by the A. L. A. M. formula it will be seen that of the 139 chassis models there are six which have motors with less than 15 H.P., fifty with a rating between 15 H.P. and 25 H.P., forty-seven with between 25 H.P. and 35 H.P., twenty-two with a rating ranging between 35 H.P. and 45 H.P. and only four with over 45 H.P., one of which has 61.5 H.P. to its credit. There are in addition ten chassis with two-cycle motors whose horsepower cannot be computed by the accepted formula.

Charts Showing Status of Commercial Bodies and Chassis

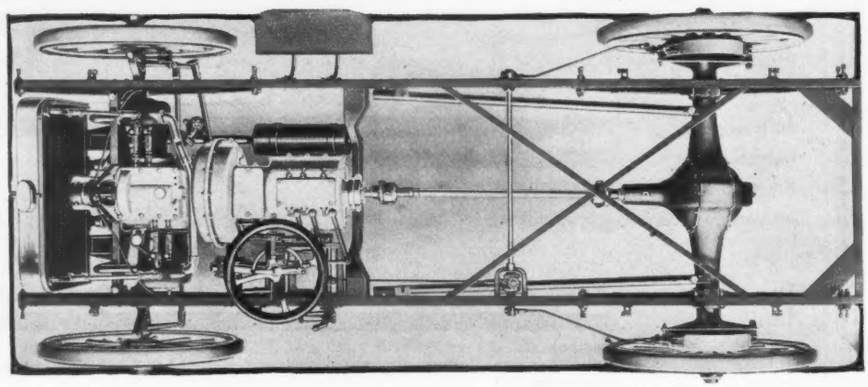


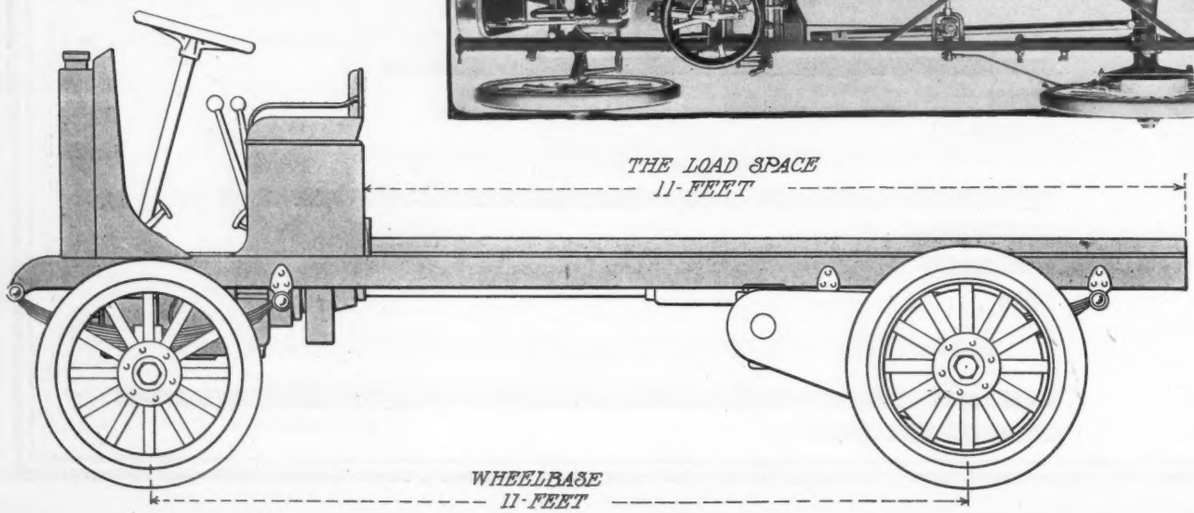
Four Leading Gasoline Truck Designs on Market Today

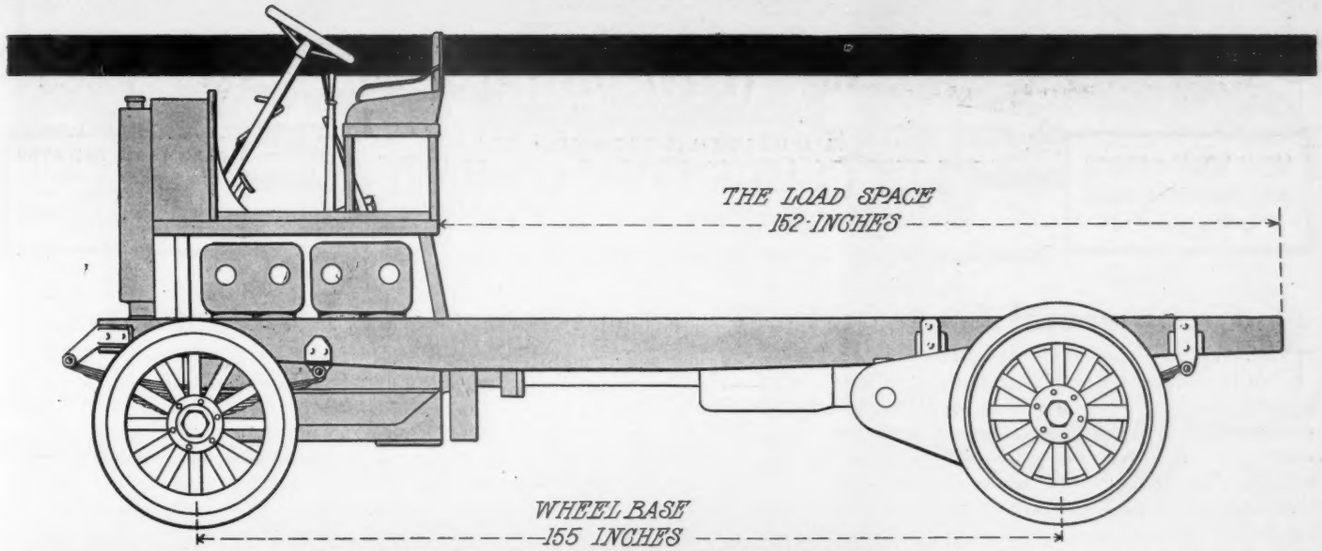


In Type I Truck the Driver Sits in Rear of the Motor as in a Pleasure Car—This Leaves a Load Space 17 Feet 7 Inches Long on a Truck With a 14-Foot Wheelbase. In This Type of Truck the Load Is Balanced Over the Rear Axle. This Permits of Lighter Front Springs to Carry the Motor and So Saves It From Excessive Vibration.

In Type II Truck Design the Motor Is Mounted Underneath the Floor Boards Leaving a Loading Space 11 Feet Long as Compared With an 11-Foot Wheelbase. This Truck Load Space Has Little Overhang Back of the Rear Axle.

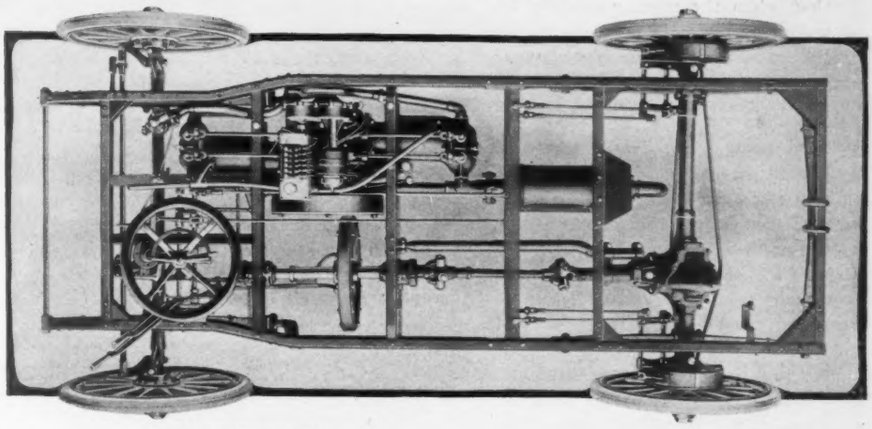


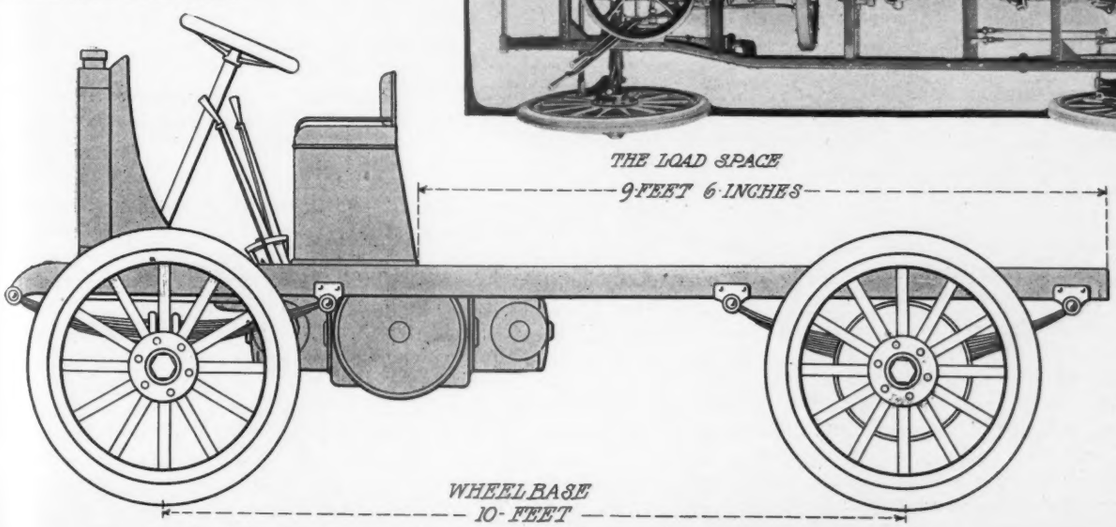




In Type III of Truck Design the Motor Is Under the Seat and Floor Boards and Above the Frame Level. The Driver Sits High Up Commanding a Clear View to the Front, Rear and Both Sides. The Load Carrying Platform Is Practically the Same Length as the Wheelbase and Has Little Overhang Back of Rear Axle. A Shorter Wheelbase Can Be Used for a Given Load Carrying Space as Compared With the Type I Construction. The Water Tank Illustration Is a Good Example of this Design of Truck.

In Type IV Truck Design the Motor Is Carried Amidship or Nearly So and Under the Floor Boards. This Gives a Load Carrying Space Practically Equal to the Wheelbase Without Much Overhang Back of the Rear Axle. The Chassis Construction Is Illustrated Herewith.





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Commercial Car Contests

THE era of commercial car contests is at hand. In some sections it was started last fall and in others the start will soon be made. Where tests were conducted last fall the enthusiasm created was so great that every city is talking of its commercial run for heavy trucks, light trucks or delivery wagons. The truck builder has tasted the measure of publicity that attends these contests and has become enthused. As a result, the coming season promises to be a very big one for the truck and delivery wagon. As in any new industry, it is expected that special rules will be needed. The rules governing pleasure contests will not do for the truck. The truck operates in a field of its own and under conditions all its own. It is being bought by different arguments than those that sell the pleasure car.

IN many of the commercial car contests of the past fall, the results have been very small because of the poor rules employed. The rules have been formed without due consideration of the real truck or delivery wagon problems. The rules have been fashioned too largely after pleasure car rules. Many of the truck tests have been mere demonstrations to see which truck can travel the fastest, so as to arrive first at the noon and night control and so get first to the ears of the daily press. In others, the consumption of fuel has been practically the only consideration, that truck with the lowest ton mileage being judged the winner. In others, electric cars have competed against gasoline cars and the electric truck has been allowed to carry an extra battery as a part of its load and to fit a switch, so that when the regular battery was exhausted the one carried as a part of the load could be switched on. Such rules as these are no good for the truck industry. They discourage the maker and give wrong impressions to the prospective buyer.

IT has been demonstrated that the cost of gasoline and oil is but 10 per cent of the operating expenses of a truck. Should this 10 per cent factor be one of the leading ones in the determination of a winner in a truck contest? The other factors which make up 90 per cent should be taken into consideration. Makers have agreed that tire maintenance is one of the biggest factors in truck operation, and if so, then the 1 or 2-day truck run does practically nothing to give the buyer a real clue to the merits of one truck over another. It is rumored that many trucks are undertired, that is, not large enough tires for the weight of the truck and the loads it is intended to carry. This question of a truck being undertired cannot be discovered in a day or a week, or, perhaps, a month. It is nevertheless to the buyer one of the big factors. It is a fact that large-diameter wheels are factors. There is a difference in the tire life on a 40-inch wheel as compared with a 36-inch size. The present day test does not take this into consideration.

COMMERCIAL tests should be carried on in the zone of operation of the truck, and not from city to city, excepting when the test is looked upon in the form of a national demonstration. It is one thing to drive a truck hour after hour over country roads with its load, and it is an entirely different one to operate with the same load in the zone of city traffic and congestion. The fuel consumption in one case is double that of the other, as has been demonstrated often.

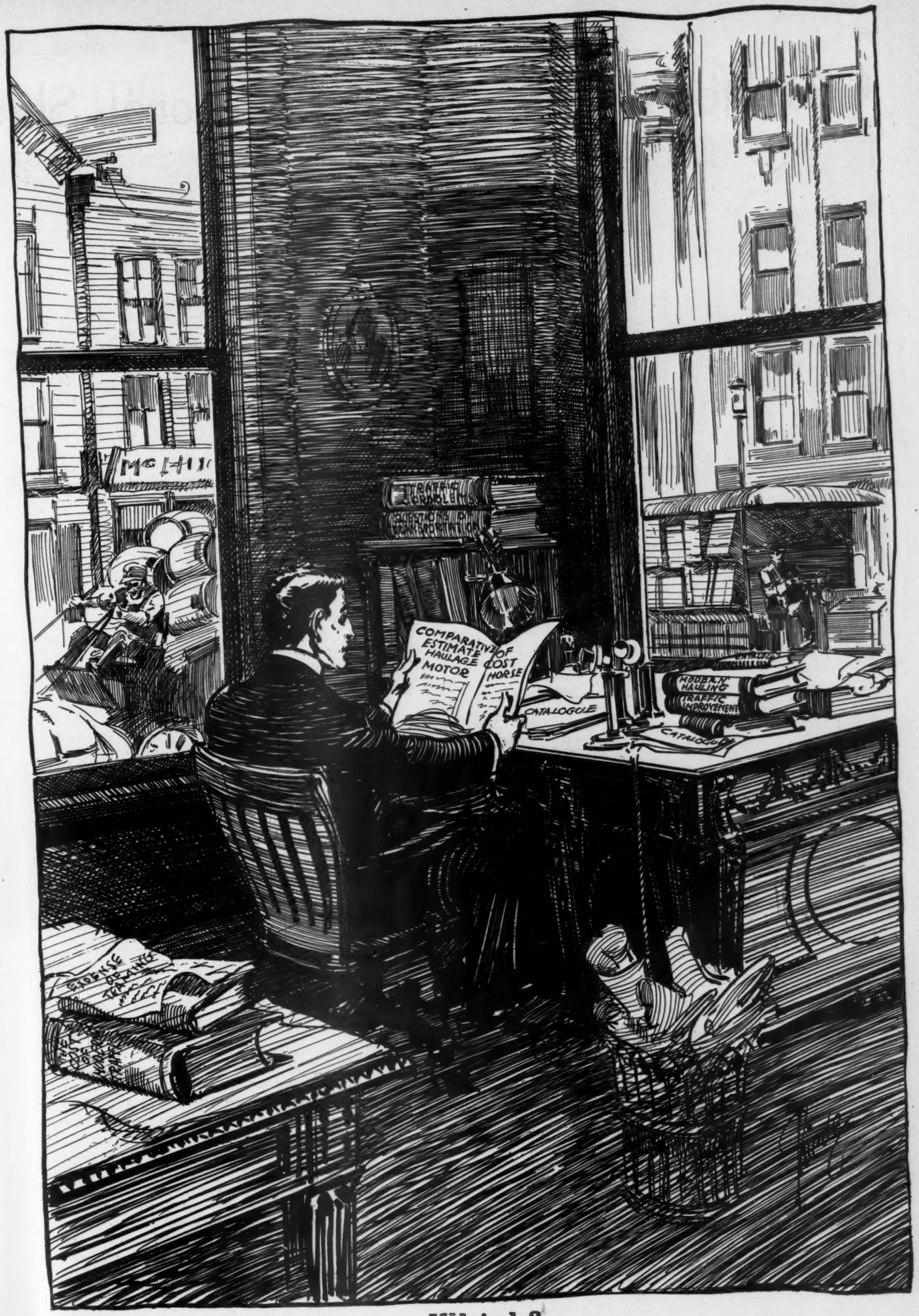
Clean Advertising of Cars

THE estimate that the public has of an industry is largely gained from the publicity features of the industry. One of the biggest publicity features is the advertising in the trade, magazine and daily press. The nature of the advertising has a big moral influence on the public and an effect on the others in the trade. During the past fall there has been a variety of advertising, that has bordered more or less closely on the margin of the improbable. Several concerns have made advertising statements regarding prices and methods of manufacture which have been accepted by practically the rest of the trade as overdrawn. In advertising and in selling cars by person honesty is the only policy. The misleading advertisement will reap its just reward. For a time it may appear to bring results, but if it does it will not be for long. Some of these concerns have already intimated that the advertisements have not brought the looked-for results.

IF a maker has cars on hand at the close of a season and wishes to get rid of them, there is no objection to his reducing prices and selling them at the reduced rates. That is good business; but he should, as done in all other lines of business, be ready to state that they are left-over models and for which reason the price is reduced. In big industries this is done annually. The biggest wholesalers have no hesitancy in advertising left-over goods and selling them at reduced rates rather than carry them over. In hundreds of mercantile lines this scheme is followed, and followed legitimately. It is better to tell the truth, because it will soon be known what the real reason is. Deceptive plans have failed this last fall, and they will fail again. You may deceive the public for a little while, but it will not be for long. There are too many dealers in the country and there are too many people familiar with the processes of car manufacture to carry on deception successfully for a very long time, and when the truth is found out it will act against the concerns making the misrepresentations.

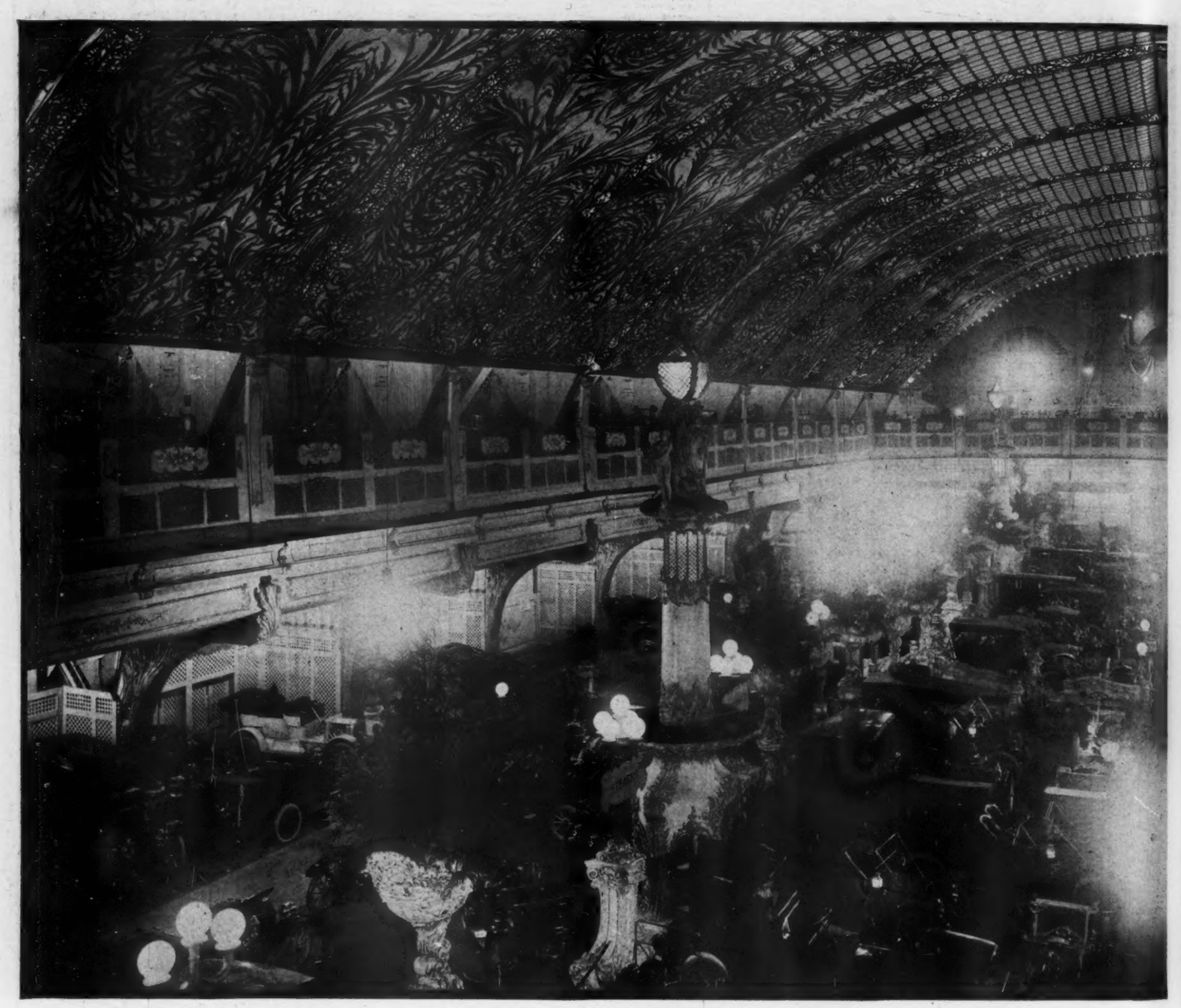
IN contests it has been accepted that correct advertising pays best. There has been little real success to those concerns that have misrepresented the facts of a certain performance or victory. Where misrepresentation has occurred it has been exposed, and the net result has been a shattering of the confidence of the public in those makers that have resorted to questionable means. The demands of the industry make it necessary, in fact, imperative to put honesty to the front in every and all cases.

THE newspaper publicity put out by many companies has not assisted the cause in many cases. There are those makers who think that publicity consists in the number of times their name appears in print rather than in what is said in connection therewith. True and valuable publicity consists not in "how often," but in "how good." It is more a question of quality than quantity. With some, where quantity has been placed foremost, it has been a case of too great familiarity breeding contempt. The great public is one of the best judges of real merit. For a time many of the daily papers published anything and everything that came along; some of them, too, do it to this day; but where such indiscriminate policy is pursued the status of the motor car is not elevated in the minds of the readers.


COMPARATIVE ESTIMATE OF HAULAGE COST MOTOR HORSE
CATALOGUE
MODERN HAULING
TRAFFIC IMPROVEMENT
CATALOGUE

Which?

Chicago's Tenth Annual National Show



PANORAMA OF COLISEUM IN WHICH CHICAGO MOTOR CAR SHOW IS BEING CONDUCTED THIS WEEK

Opening Night Proves a Record-Breaker in That the Attendance is 20 Per Cent Greater Than Ever Before at the Initial Session—Exhibitors Delighted To Find Many Good Prospects in the Crowds That Jam the Aisles

As Usual Everything Is in Readiness When the Doors Are Swung for First Time and All Afternoon and Evening Spectators Move From Stand to Stand Examining New Cars—Decorations in the Coliseum Do Not Meet With Approval of Some

CHICAGO, Jan. 29—Living up to its reputation for being the business show of the year, the tenth annual exhibition of the National Association of Automobile Manufacturers opened yesterday afternoon in the Coliseum and First Regiment armory in this city, and reports from the exhibitors after the first afternoon and evening make it certain that this session will be more productive of sales than any of its predecessors.

Show Ready on Time

In marked contrast with the recent affair at the Madison Square garden everything practically was in shape when the opening hour of 2 o'clock arrived. There was no holding back of the crowd to wait until the aisles could be cleaned up, as was the case in New York, and when the

Starts Off In A Most Auspicious Manner

And Showing the Ceiling Decorations and Four Fountains on Main Floor

first bunch of spectators swarmed into the building a neat, orderly show, with everything in place, was discovered.

Changes in Coliseum

The greatest change in appearance has been wrought in the Coliseum, which has donned an entirely new dress, while over in the First Regiment armory the same stage settings that obtained last year are to be seen.

Comparisons between the two buildings would seem to give the verdict to the armory, for while the promoters have labored hard to produce startling effects in the Coliseum they seem to have overshot their mark to a certain extent and not to come up to the mark of last year. Overhead in the Coliseum there is little criticism to be made, for the effect

Count of Motor Vehicles in the Four Sections Demonstrates That There Are More in This Exhibition Than in Any of Its Predecessors—Total of 395 Complete Cars and Chassis Reported—Study of the Body Styles

Complaint Is Heard Because Management Refuses To Sell Half-rate Tickets for Use of Makers and Dealers—Also Fault Is Found Because Privilege of Demonstrating Parties Returning After a Ride Without Having To Pay Again Is Denied

EXTERIOR OF CHICAGO COLISEUM WHERE SHOW IS BEING HELD

of the latticed ceiling with its indirect system of lighting is beautiful. The huge columns that tower from each of the four sections with their fountains and nymphs are rather of an artistic nature; the lanterns sprinkled in the various stands have a goblin-like effect, but it must be admitted that there is entirely too much papier mache work at the base of the stands. Each corner booth is encircled by a papier mache fence, so to speak, which comes just high enough to obstruct a good view of the cars which are displayed. It would seem that a plain brass railing would have been much better from the makers' standpoint, in that it would give the spectators' eyes a free sweep at the graceful lines of the cars on view. However, that is a mere matter of opinion. Probably an artist would, taking the scene as a whole, regard the Coliseum as a masterpiece. Be that as it may, though, there were more than a few adverse criticisms heard last night when the critics made their rounds of the show.

THE FLOWER POT
USED IN THE DECORATIONS

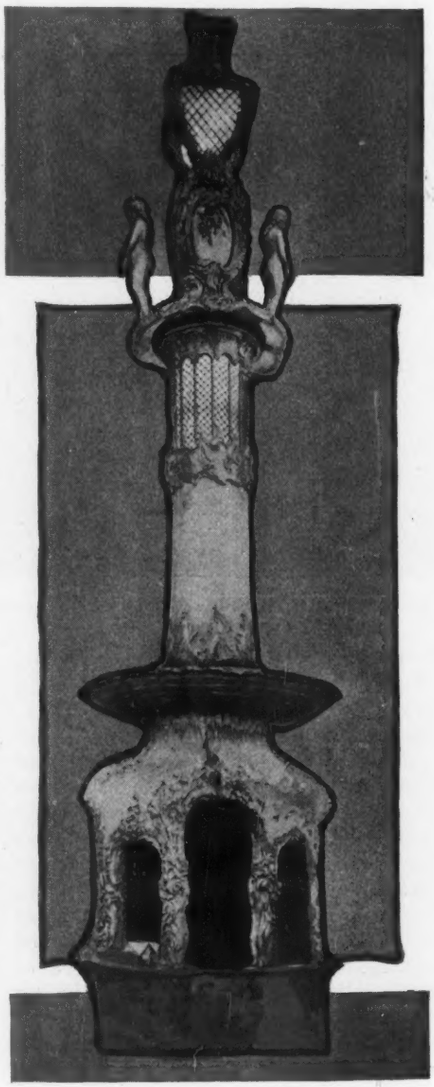
Aisles Are Narrow

The aisles of the Coliseum also are much narrower, apparently, than ever before, and the huge throngs that were in the building last night found it hard to navigate. Another thing that brings about congestion is the overcrowding of the stands with cars, each of the exhibitors having so many models to show that they are inclined to try to accomplish the impossible. The first floor of the annex isn't so bad, and the way it looks now it certainly is an improvement over last year, being better lighted, for one thing, and also better ventilated. The second floor of the annex also has more elbow room and there is not the general crowding of the exhibits as found in other years.

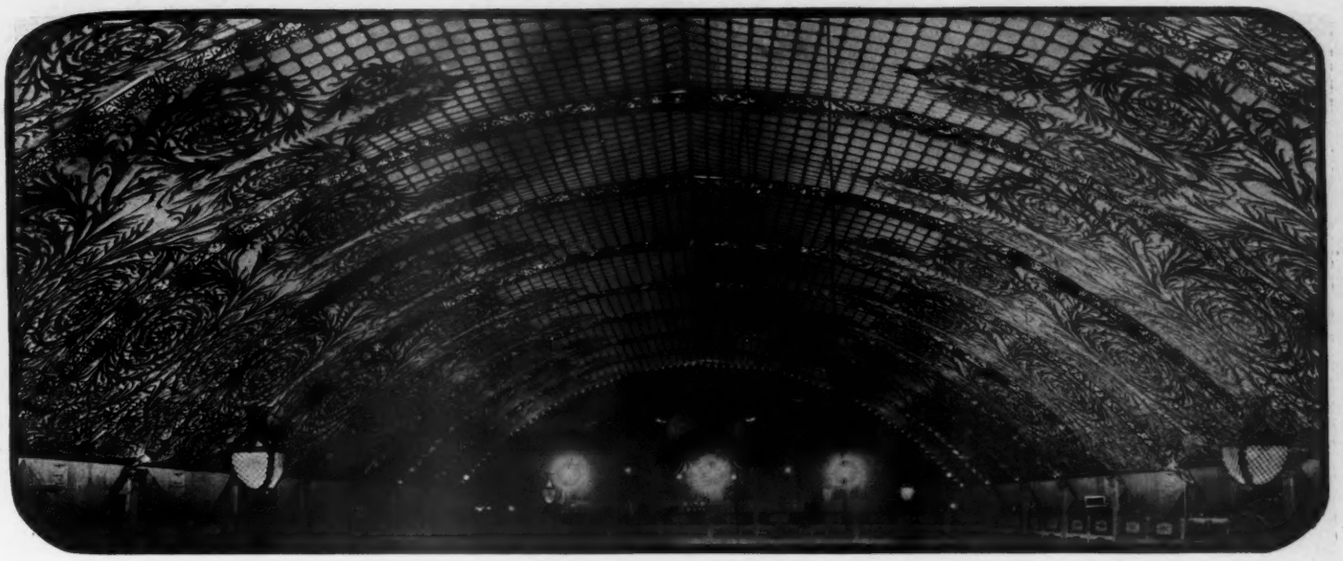
"Pneumonia Alley" Gone

Leaving the Coliseum and going over to the armory one finds another improvement in that the famous old wooden tube that formerly connected the two shows has been done away with. The elimination of the pneumonia-breeding connecting link has resulted in the use of the alley itself as a broad walk, which takes the spectators from one building to the other. The alley is asphalted and strewn with sawdust, while overhead there is a canvas canopy which is all right at the present time, but which may bring about discomfort in case it storms during the show. To get from one building to another, however, one had to secure a ticket, which brings about congestion at each of the doors, in which undoubtedly the armory is the sufferer, for it was noted last night that many people who had been headed for the soldiers' home turned back when they saw the crowd at the exit of the Coliseum fighting to get tickets.

In the armory the scene is beautiful. The English garden idea designed by H.



THE FOUNTAIN
FOUR OF THESE ARE USED THIS WEEK



THE ELABORATE CEILING DECORATIONS IN THE COLISEUM FOR THE SHOW

A. Thiede, that was used in the Coliseum last year, has been moved here and the trees and foliage make a charming effect and form a natural background for the display of the cars. There is an absence of the papier mache dudads that is most pleasing, and one gets a clear vision of each car entire as it stands in the booth. The background of each stand is an imitation iron fence with supporting brick pillars.

The Accessory Display

While the accessory displays in both buildings cover a wide scope and are perhaps more representative of the industry in general than the one in New York, still it looks to one who has been to both shows as if New York had it on Chicago in this particular department. The accessories occupy the gallery of the Coliseum, the second floor of the annex, and the gallery of the armory. Most of these concerns will stick for the full 2 weeks, while in the last half there will be some additions which display goods particularly suitable for the commercial car industry.

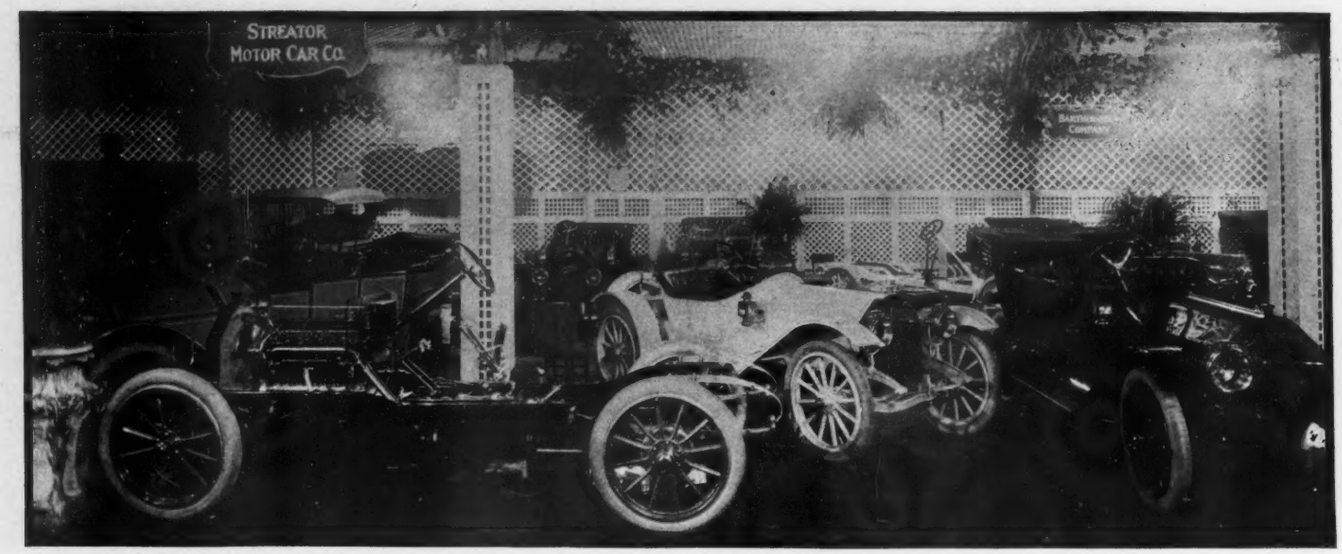
THE BIG FLOWER VASE
THESE ARE USED IN DECORATING

Complaint is heard that there is too much red tape in connection with the show. Exhibitors to get tickets had to first sign a written application and then go in person to the Coliseum and sign again before the button was handed out. On top of this came the edict that there would be no return tickets issued to exhibitors sending out prospects for demonstrations, and now it is necessary for each prospect returning to the building to have to pay another entrance fee, or rather the exhibitor has to do it himself.

No Half-Rate Tickets

As if this were not enough, Chicago dealers are complaining because of the increase in the price of tickets, which they distribute to their customers and prospects. In previous years these tickets were sold at 25 cents each, but at that price this made a considerable total, for it is claimed by the dealers that last year they purchased 100,000 tickets at this price. This year the management has ruled that each of these dealer's tickets will cost 50 cents, the same anyone else pays. The result is that the Chicagoans have an understanding with each other that they will not stand for this increase in price, and many of the big dealers of this city have not taken any tickets for distribution among their patrons. What effect this will have upon the general attendance is hard to estimate at this time, but it is thought it will not keep many away from the show. The people who heretofore received these tickets have been under the impression that they were complimentaries given out by the management to increase the attendance. When the dealers have explained to them that such is not the case, that the pasteboards represent a financial

THE SIGN PILLAR
EACH EXHIBIT SPACE HAS ONE



COLISEUM ANNEX—THE STREATOR COMPANY'S EXHIBIT OF HALLADAY CARS

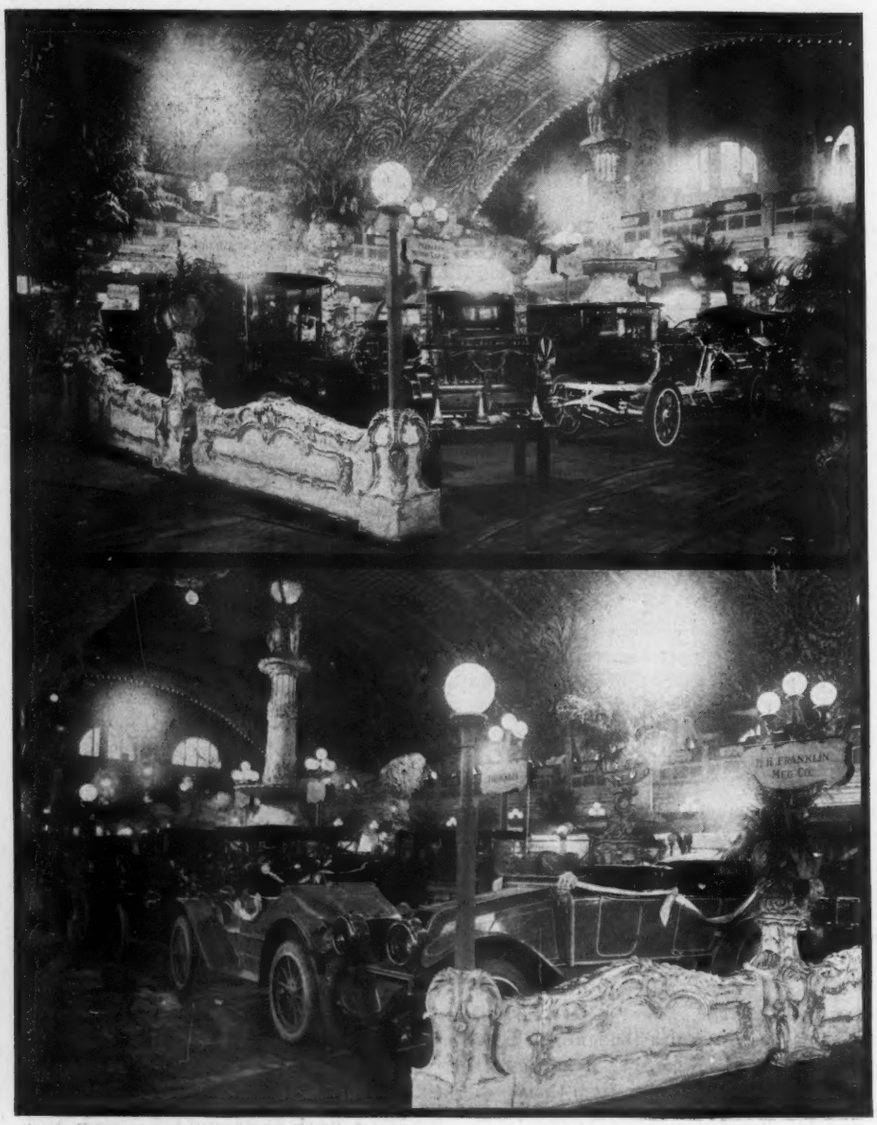


EXHIBIT OF PEERLESS CARS, SHOWING SIX-CYLINDER MOTOR
FRANKLIN SPACE WITH NEW TYPE FRANKLIN BODIES

investment, they take the matter good-naturedly and pay their own way. Probably the only kickers are the chauffeurs, who have been accustomed in the past to having almost an unlimited supply of tickets to hand out to their friends.

Junkets Cut Out

Another noticeable thing in connection with the show is that the Chicago distributors, who heretofore have been in the habit of inviting their agents to come on for a week at the expense of the Chicago concerns, have cut out such junkets to a certain extent, having discovered that this is not a paying investment. The country dealers heretofore have brought their prospects here to look over the cars, but the canny manufacturer has investigated and found that in many cases such prospects have gone back home without buying or else have closed for other cars, while the distributer or manufacturer has had to pay for the trip.

Shows have become such matter-of-fact things nowadays that it is no longer considered a necessity that each concern send on its officials and heads of departments for the full week or 2 weeks, as it may be, and at Chicago it is noted so far few of the big officials are in attendance, while those who are attending only intend to stay a day or so. It is claimed that the show scheme has been so systematized that now it is possible to turn the exhibits over to competent men from the factory, assisted by local agents who are fully capable of transacting any and all business that may come up. However, during the present week there will be quite a few of the big people come on brought here to a certain extent by meetings of various organizations and committees, and also by a natural curiosity to see just what kind of a show the National Association of Automobile Manufacturers has put on.

Big Crowd First Night

If the first afternoon and evening of the show is any criterion, the tenth annual

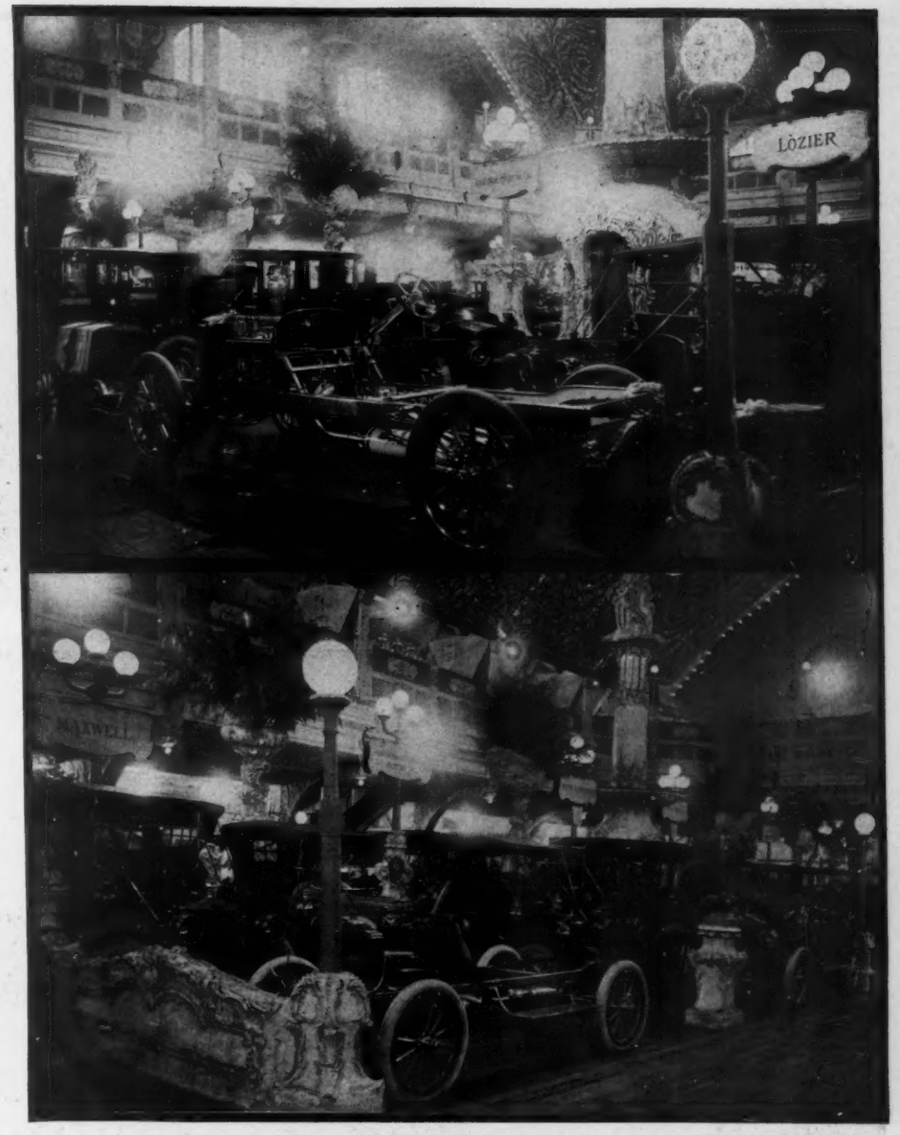
exhibition is going to be the greatest in the history of the Coliseum and First Regiment armory. Exhibitors so far are delighted with the outlook and the claim is made that more live ones bobbed up yesterday than ever before were noted at the first day of the show.

In the first place the crowd was 20 per cent larger than ever before noted on the opening day, and naturally this would bring out more prospective purchasers of cars. Such proved to be the case, in the evening, and even in the afternoon, when there wasn't a very large crowd out, there were many who evidently were in the market for cars. This was particularly noticeable on the stands where the higher-priced machines are on view, and from many of these come reports of plenty of prospective business. There were not many discovered, though, who were buying their first cars, for nowadays it is hard to find a man who is possessed of a comfortable bank balance who does not own a motor car. Such a man, too, is well versed in technical details as a rule, so the task of the salesman is made much lighter than when he has to start the education of the prospect in the primary class.

Tendency of Purchasers

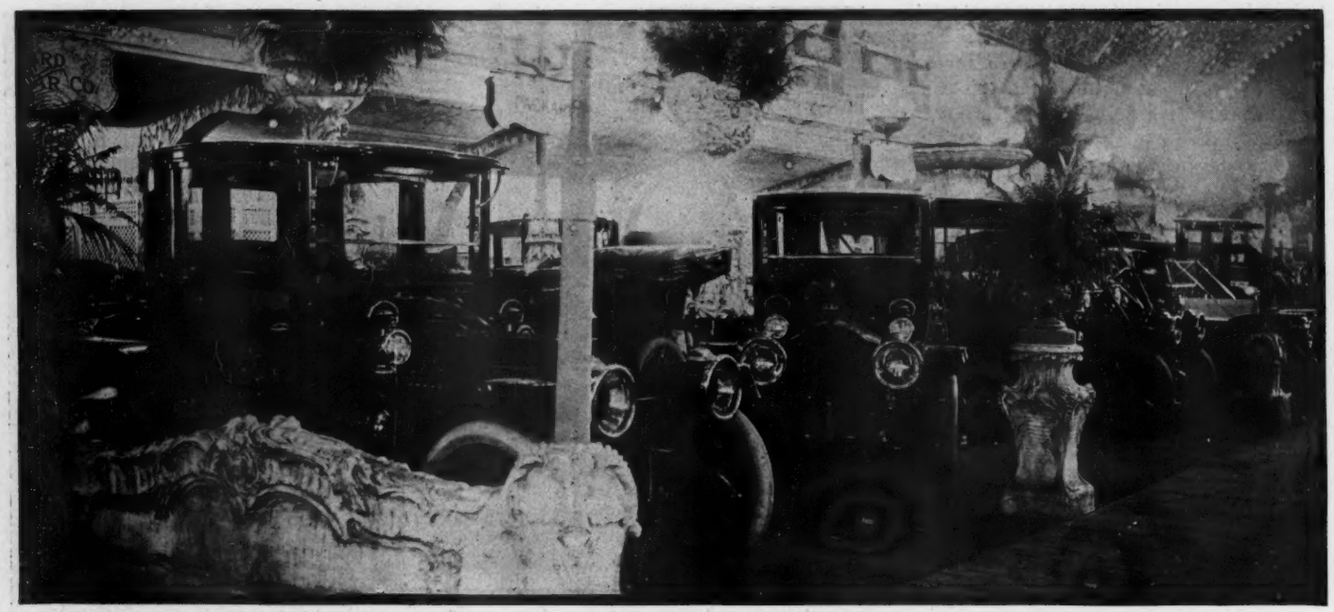
There was also noted yesterday a tendency on the part of purchasers to buy higher-priced cars than the ones which they now own. People with cars for which they paid $2,000 or $2,500, after having used the machine for a year, feel that they now can afford to buy something a little better and in consequence of this belief they move into the $3,000, $3,500 and even $4,000 class.

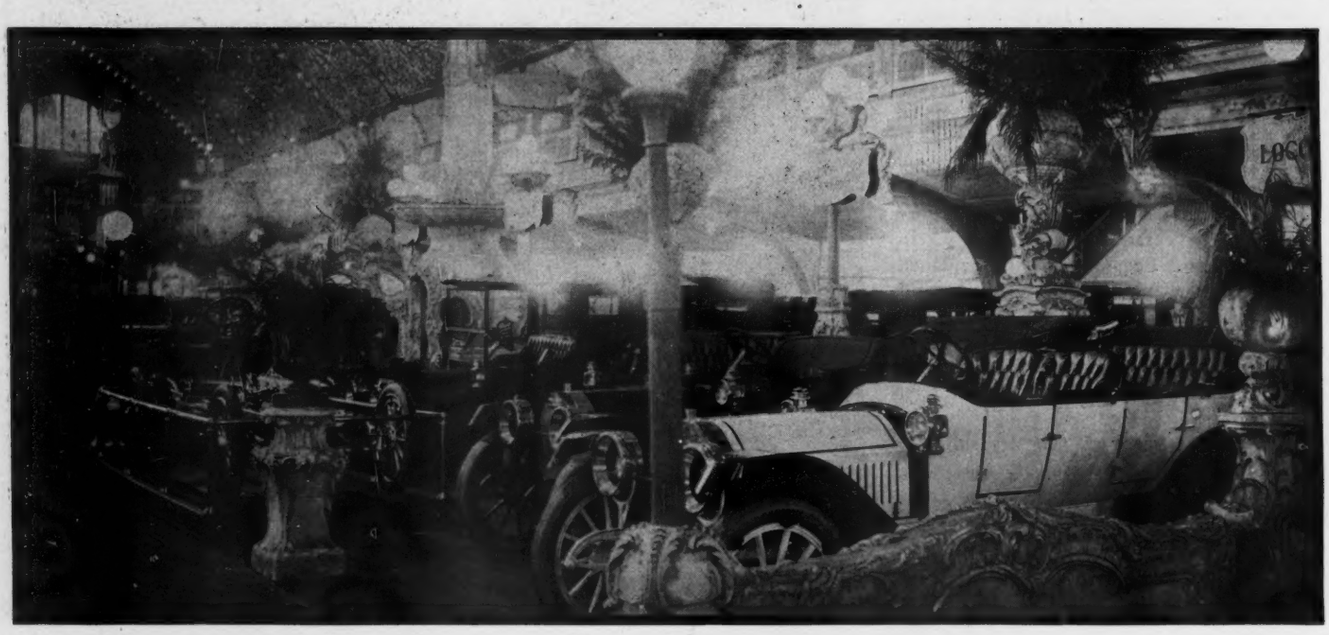
It is the same way all the way through. The advance is noted also at the other end of the line, users graduating from the $1,000 to the $1,500 class, and from the $1,500 class to the $2,000, all of which goes to substantiate the claims of the makers of low-priced cars that they really are the benefactors of the industry in that they

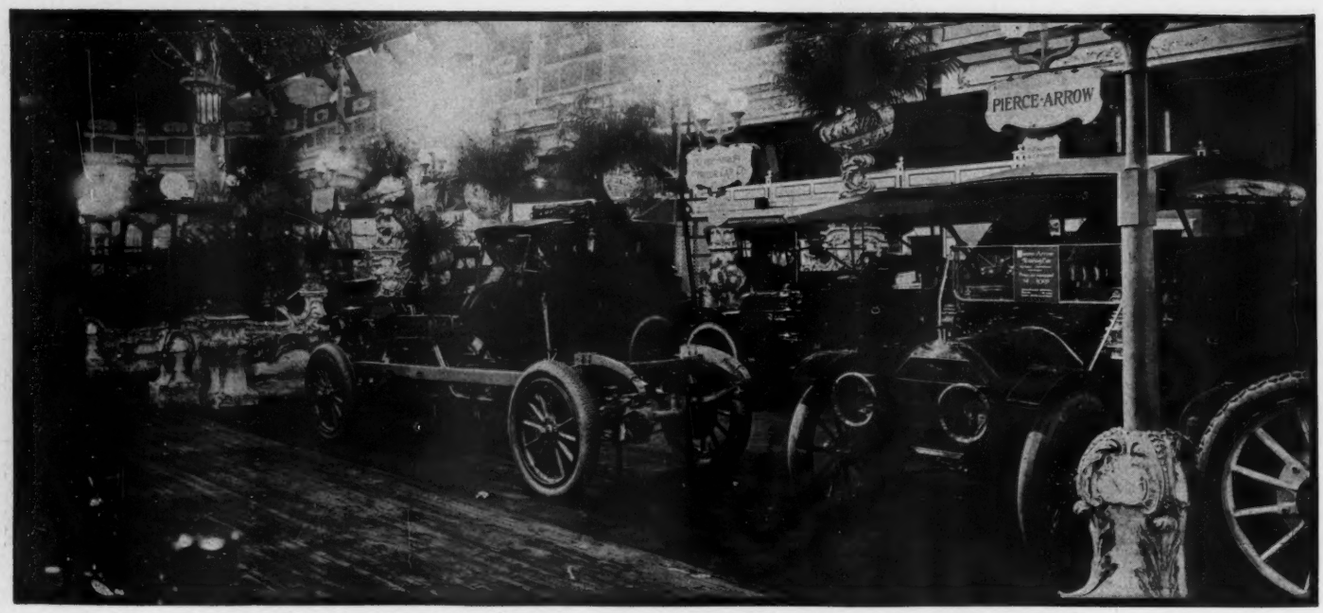


LOZIER CHASSIS AND LINE OF PLEASURE CARS
BIG DISPLAY OF MAXWELL CARS IN THE COLISEUM

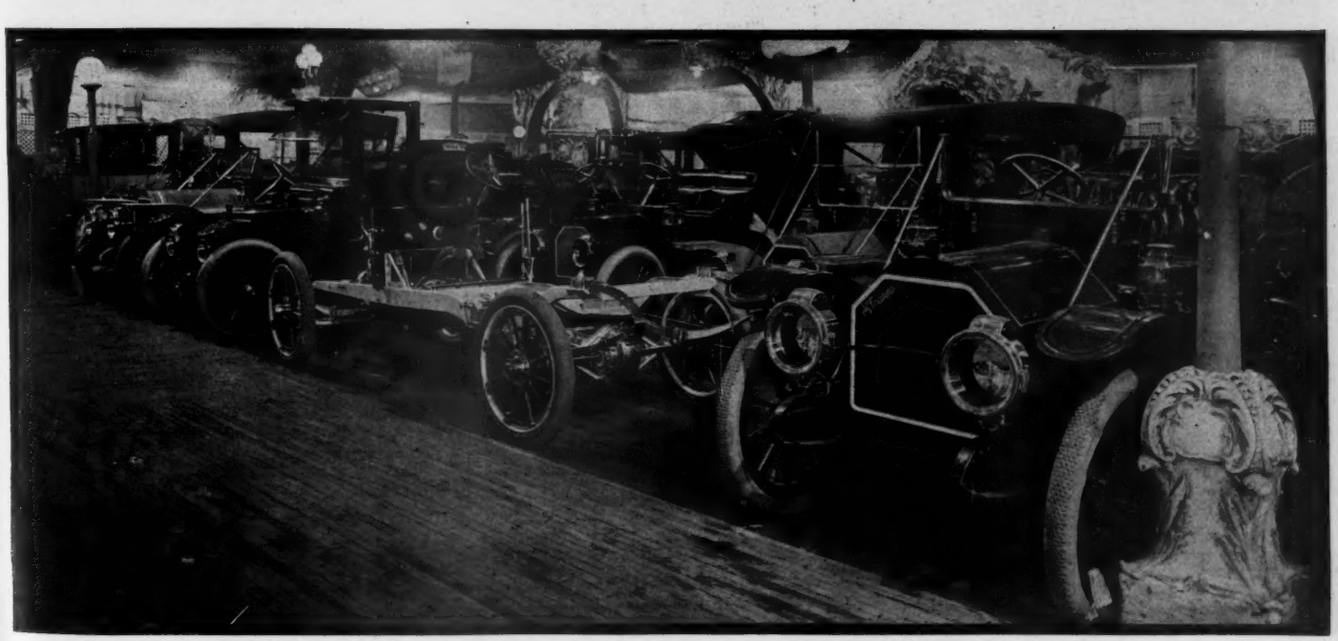
COLISEUM ANNEX—MARMON TOURING AND SPEED CARS AND MARMON TROPHIES







Coliseum Exhibits: From the Top Down—Packard, Locomobile and Pierce-Arrow Spaces



Coliseum Exhibits: From the Top Down—Stoddard- Dayton, Winton and Stearns Exhibits.

CHALMERS DISPLAY OF MODELS 30 AND 40 IN COLISEUM
CADILLAC SPACE SHOWING BIG ASSORTMENT OF PARTS
LARGE EXHIBIT OF JACKSON CARS IN COLISEUM ANNEX
ONE DIVISION OF MITCHELL DISPLAY IN THE COLISEUM

educate the user to the profit of the manufacturers of higher-priced machines.

Chicago's claim to being the largest show of the year is borne out by a count of the motor vehicles on display in the Coliseum, Coliseum annex, Coliseum basement and First Regiment armory, which shows that the record so far as car representation is concerned has been broken. Counting chassis and cars as a total, there are 355 gasoline cars and forty electrics, giving a grand total of 395. The record has not been smashed by a very large margin, it is true, for there were 384 all told last year, but it must be remembered there were thirteen commercial cars and chassis in the 1910, whereas this time the commercials have been saved for next week.

Comparison of Shows

Comparing Chicago with the two New York shows—the one held in the Grand Central palace and the other in the Madison Square garden, it is discovered that again Chicago has the advantage. Counting everything in the palace, the independents only had a total of 184, while the garden came closer with 320, for sixty-seven exhibitors—better proportionately, though, than Chicago, which has ninety-three different makes of cars on view.

Going still farther back and taking 1909 into consideration, the statistics show that that year the N. A. A. M. show had on view 355 complete cars and chassis in the present show.

A trip through the Chicago show today developed interesting statistics as regards body types, and it is surprising to note that the armory has within a third as many cars on view as has the Coliseum proper. In the Coliseum there are 171 gasoline cars and chassis, while in the armory there are 110. There are thirty-seven in the annex, and fifty-five in the basement.

Not So Many Chassis

Although this year's show has a bigger car total than last year's, still there are not as many chassis on view. Whereas, a year ago, there was a total of seventy-one, this year there are sixty-eight, counting three electrics. The past year has seen a gain in popularity for the five-passenger car and a falling off in the four-passenger class. Last year there were seventy-three five-passenger cars, while this year there are ninety-six. There are fifty-one two-passenger cars, mostly roadsters, whereas in 1910 there were only thirty-five on view. The seven-passenger also shows a gain, having jumped from forty to fifty-two. The three-passenger about holds its own, showing eight this time, whereas a year ago there were nine on view. The show proves most effectively that the rumble seat has gone into the discard. Makers who formerly felt it necessary to put on a rumble on a roadster now use the space either for a gasoline tank or a trunk.

Limousines are slightly more in evidence

than ever before, there being twenty of these luxurious rigs on view, as compared with seventeen a year ago. The landaulet, however, has slumped to a certain extent, there being only five of this type on view as against eight last year, when there were fewer cars on view. The coupe is gaining in favor, but not to the extent one might think by looking at the procession that nightly goes down Michigan avenue. Seven coupes are in the show, as against only three in 1910. Just one six-passenger car is found.

The electric field has gained slightly in strength, but not to the extent the critics might expect, for there only are seven more cars and chassis of this type in the two buildings, forty in all being shown. In the body line the coupe easily is the most popular, for of the forty, eighteen are of this type, while only four victorias are displayed. There are eight broughams and three runabouts, while a novelty is a touring car brought out by the Babcock company.

Novelties in Bodies

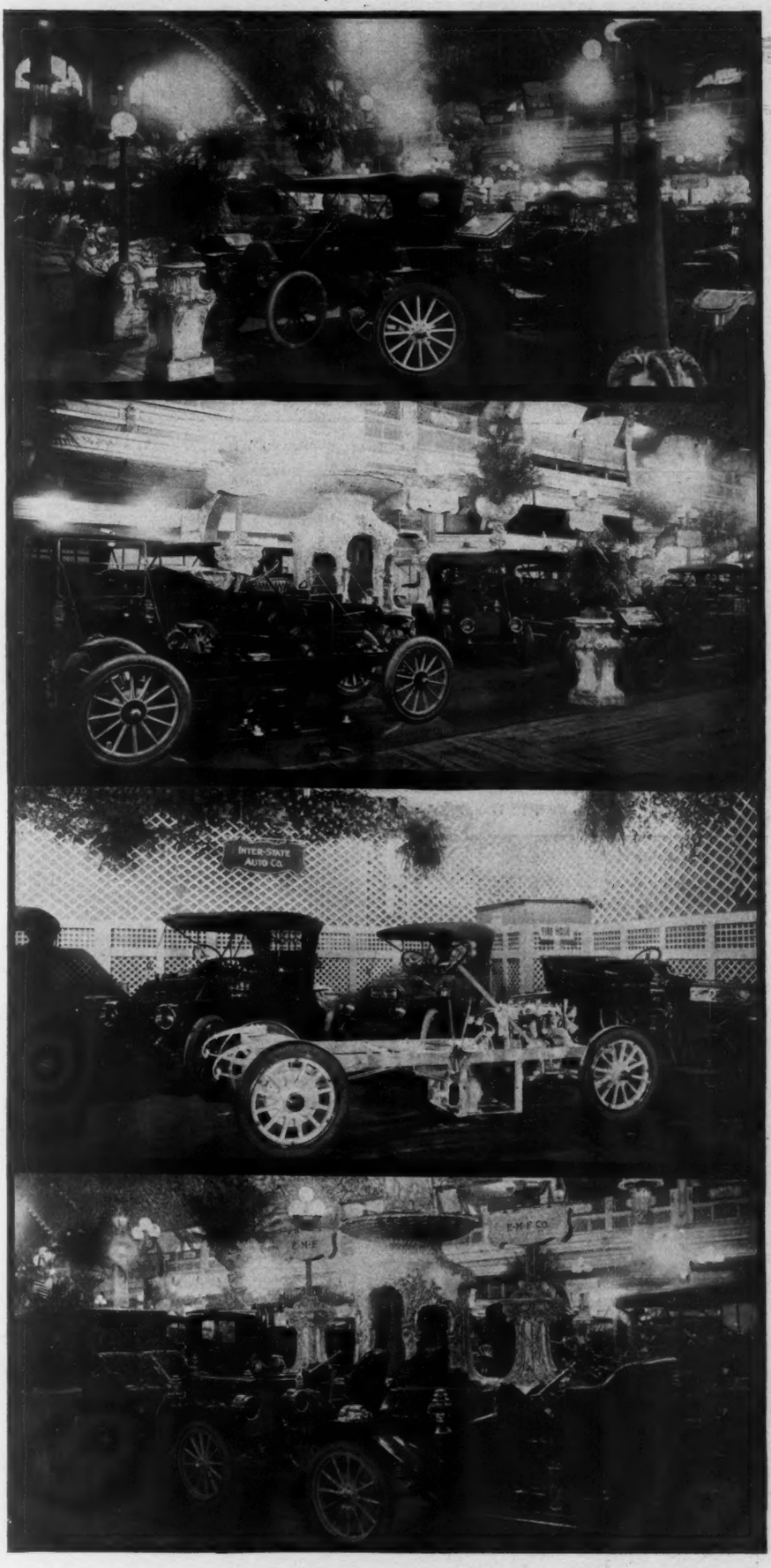
Several novelties in bodies are discovered, one of the most novel being the duck boat, as it is called, which is shown by the Speedwell. As its name implies, the body is shaped like a boat, with three individual seats, the rear one being in what might be termed the stern of the "boat," being a comfortable looking one at that. The car is finished in mission style, has left-hand control, and has attracted considerable attention. The Stoddard-Dayton has what it calls its sedan body, which also was shown at New York, an inside-drive affair with individual front seats. The Pierce-Arrow has its George Washington coach and the Packard its fore-door type of limousine. The Thomas also has a town car of unique body lines.

Summing up the body statistics as noted at the show, the following results are obtained:

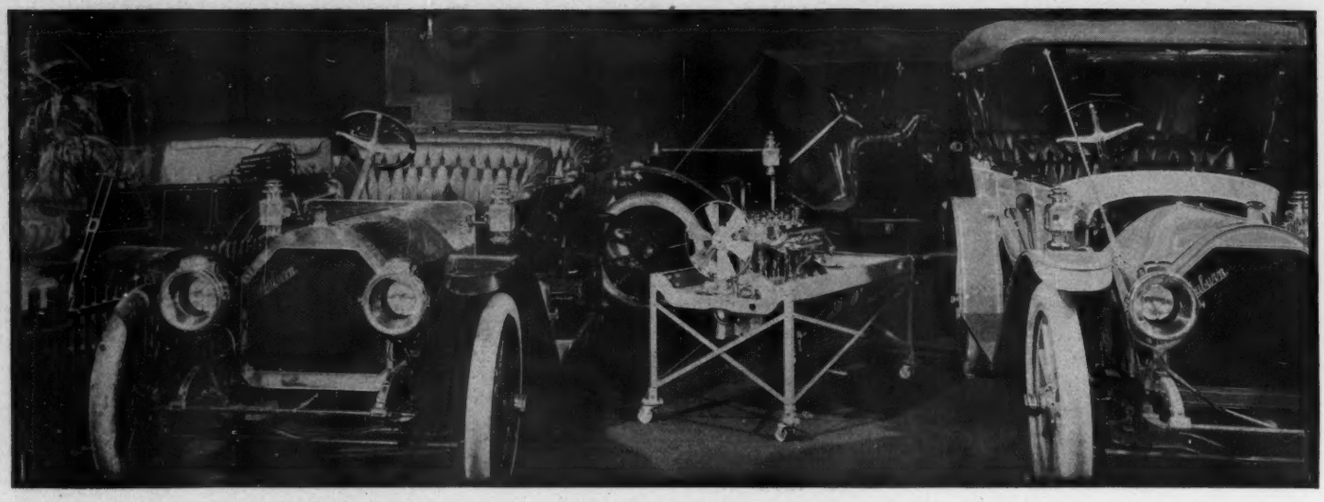
Type	1911	1910
Chassis, gasoline	65	71
Five-passenger	96	73
Four-passenger	50	74
Two-passenger	51	35
Seven-passenger	52	40
Three-passenger	8	9
Limousine	20	17
Coupe	7	3
Landaulet	5	8
Six-passenger	1	0
Electrics	40	34

The Outside Shows

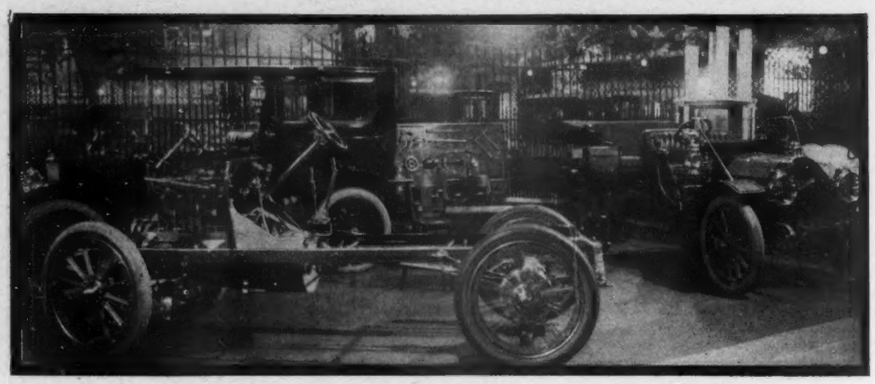
Not so many outside shows are being held this year, or rather there are not so many new cars breaking into the limelight, but for all that Michigan avenue presents a gay appearance at this time. Some of the concerns which are in the Coliseum are taking advantage of the opportunity to also hold shows in their salesrooms, where they can entertain their agents and not be bothered by the crowd. Several of the doors are especially decorated for the occasion, the Ford branch in particular. Some of the people on the outside are there from choice, some could not get space, while others are barred because of having participated in the un-



MOLINE CARS AT THE MAIN ENTRANCE OF THE COLISEUM
REO CHASSIS AND CARS SHOWN IN THE COLISEUM
COMPREHENSIVE INTER-STATE DISPLAY IN COLISEUM ANNEX
E-M-F CARS DISPLAYED ON MAIN FLOOR OF COLISEUM



SCENE IN THE ARMORY—STAND WHERE THE AUBURN LINE IS ON EXHIBITION



STAND OF THE DORRIS, ADVANTAGEOUSLY LOCATED IN ARMORY

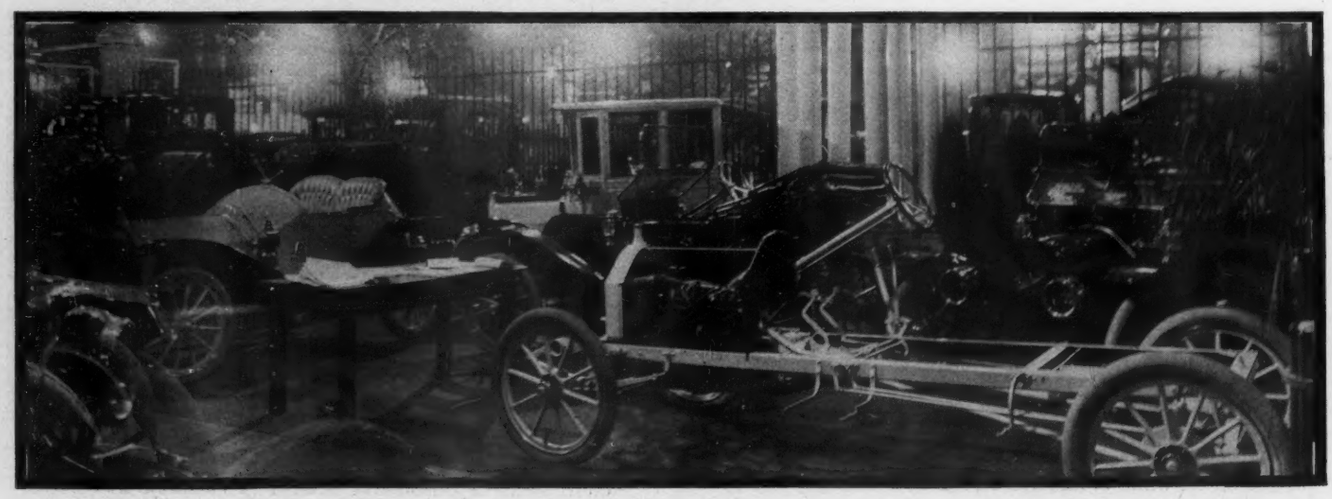
POPE-HARTFORD HAS A CHOICE SPACE IN THE COLISEUM

sanctioned show of the Grand Central palace.

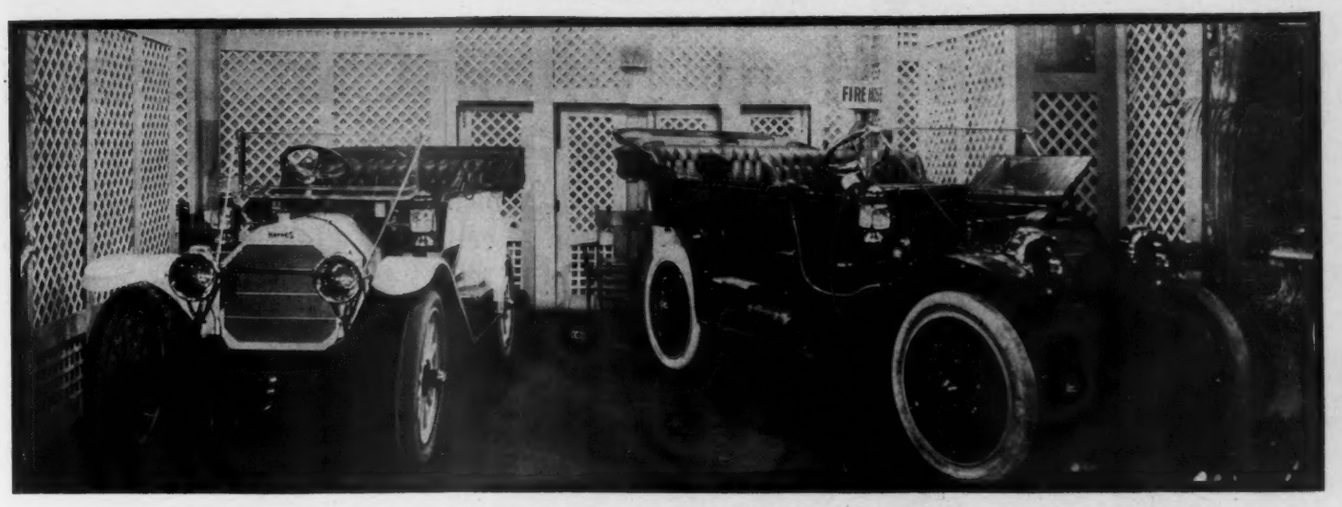
Inside the loop the most pretentious display is found at the LaSalle hotel, where the Warren-Detroit, Paige-Detroit, Cunningham and Ideal electric are being displayed. The Palmer & Singer is at the Auditorium. Going along the row one finds private shows at 1349 Michigan, where the Alpena is being displayed; at 1351, where the Atterbury truck holds forth, and at 1353, where the Davis is on view, a car made by the G. W. Davis Carriage Co., of Richmond, Ind. The Imperial and Grout are on view at 1407, while at 1444 is the elaborate display by the Ford company.

Velie Has Big Show

The French Renault is not in the showing, either, but is displaying its new models at its branch at 1606. Across the street the Velie has an exhibition of considerable magnitude, attention to which is attracted by a huge painted sign at corner of Sixteenth street. A little farther south, at 1725, the Centaur Motor Co. has a full house with the Abbott-Detroit, Krit and Dayton electric. The new bunch of stores at Twentieth street also contains several of the outside shows, among them being the Oakland, Pratt-Elkhart, Cino, Empire.



FULL LINE OF HUPMOBILES IS SHOWN IN BIG SPACE OF DETROIT CONCERN IN THE ARMORY



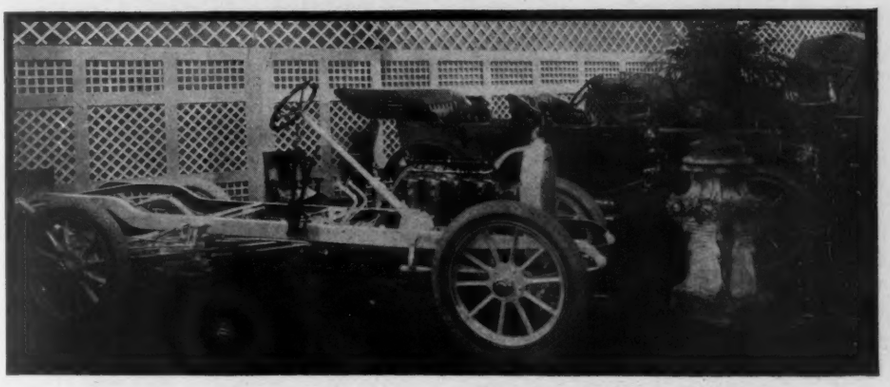
HAYNES IS ENCAMPED IN COLISEUM UNDER EDGE OF THE WEST BALCONY

Lexington and Rayfield. The Nyberg Automobile Works at 2437 has an extensive display, while the southern sentinel of the row, the Apperson, is located in its Chicago branch at 3300 Indiana avenue.

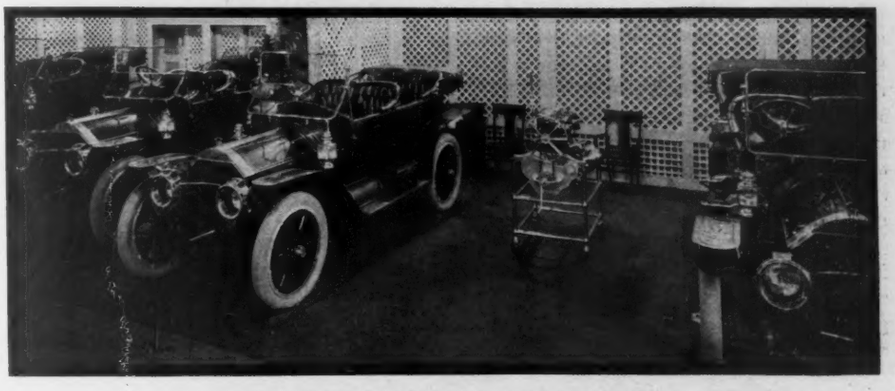
All kinds of schemes are being used along the row to attract attention to these private shows, one of the most interesting being the kite idea of the Diamond Rubber Co. Two immense kites are flown above the First Regiment armory and half-way down the string is an aeroplane carrying the dummy figure of a man.

Fire On Chicago's Row

Chicago, Feb. 1—Exhibitors at the Chicago show were given a big scare last night when fire broke out at 1426 Michigan avenue, immediately in the rear of the Coliseum in the store occupied by C. A. Coey & Co. and in which the McFarlan company was holding an outside show. The fire broke out while a small crowd was watching the moving pictures of the Elgin road races, and before the flames were subdued the store and its contents had been damaged to the extent of $30,000. The flames also penetrated the stock room of the Standard Automobile Supply Co., next door south, where they did $15,000 worth of damage. The McFarlan exhibit was removed in safety and now is being shown at 1413 Michigan avenue.



GLIDE STAND WITH A STRIPPED CHASSIS A FEATURE

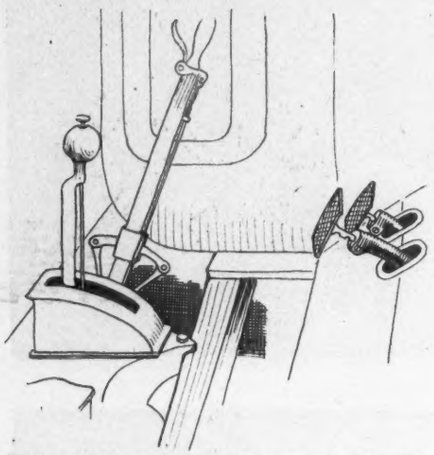


KNOX ONE OF THOSE LOCATED UNDER THE COLISEUM BALCONY

A GREAT VARIETY OF BODIES IS FOUND IN THE BRUSH COMPANY'S EXHIBIT

Changes in Many Minor Car Details

Features of This Year's Models Include Simplifying of Motor Lubrication Systems, in Which Provision Is Made for Filling Oil Reservoirs and for Ascertaining Quantity Each Contains



WHITE CENTRAL CONTROL AND ADJUSTABLE PEDALS

IN recent numbers of Motor Age a great many of the improvements and refinements to be seen on the various 1911 cars have been illustrated and described; and it has been shown that considerable attention has been given to the little things which the past has found wanting.

Motor lubrication systems have been simplified and rendered more reliable. Convenient means have been provided for filling the oil reservoirs of motors, for ascertaining the amounts of oil in these reservoirs, and for draining them when a fresh supply is to be put in. Ignition systems also are greatly simplified, and their reliability increased. Ignition devices have been improved by their manufacturers, and the makers of motor cars have vied with makers of ignition apparatus in providing the best possible facilities for their application, protection and accessibility.

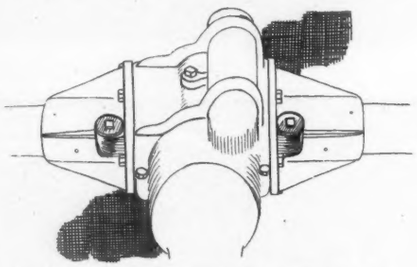
Many cars this year have switched the driver's seat to the left side of the car, and arranged the gear-shifting and emergency brake levers in the center of the car so that it should not be necessary for an operator to become accustomed to controlling them with the left hand when used to a right-hand control. In such cases the levers are generally mounted on the gearset housing, as shown in the accompanying illustrations.

LEXINGTON'S MOTOR OIL GUAGE AND FILLER

White's Gear-Shift System

The White company this year has brought out such a model. The emergency brake and gear-shifting levers are in the center of the car and a polished aluminum case, or dress guard, encloses the quadrant of the gear-shifting lever. Three-point suspension is employed in the White gearset; and, as shown, the forward end of the gearset housing forming one point, rests on a cross member of the frame arranged directly under the footboard of the front seats. The two adjustable pedals employed on the White models are also illustrated.

A good example of the improved facilities provided for replenishing the oil supply in the crankcase of a motor, and for determining the amount therein, is found in the Lexington cars, and illustrated in the accompanying sketch. In another illustration the bevel driving gear and differential housing of the Moon rear axle is shown, with two large plugs on either side of the main housing, which may be easily removed for the lubrication or adjustment of the bearings at the inner ends of the transverse driving shafts.

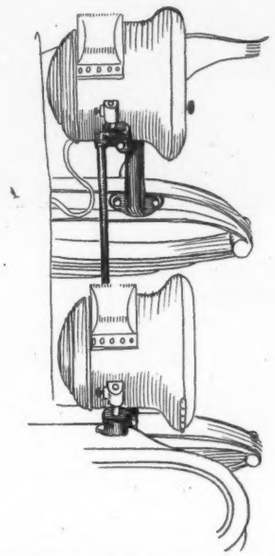


FOR OIL AND ADJUSTING MOON REAR AXLE

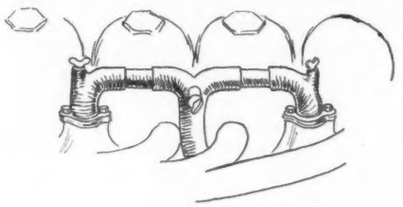
Lamp Brackets More Substantial

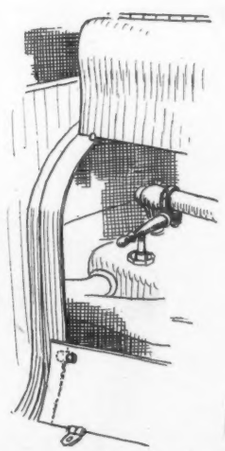
Lamp brackets this year are of a far more substantial character; brace rods are fitted which extend transversely across the frame from one bracket to the other, and the brackets are so arranged that the lamps sit as far back as possible so that they are less apt to be damaged in congested traffic. Unusually stout brackets are to be seen on the Marmon cars. They are malleable castings of channel section; they form a support for the aprons between the front fenders and the frame, which greatly increases the rigidity of the front fenders; and there is a heavy brace bar extending between the inner prongs of each bracket to reinforce them.

As for the improvements in the means for facilitating the starting of motors in cold weather or when an exceptionally poor grade of fuel is employed, some manufacturers have brought out devices by means of which the cylinders are automatically primed; and not only primed with liquid fuel, but the fuel, in some cases, is sprayed direct into the inlet pipe of the motor as the motor is cranked. The gradual decrease in the volatility of



MARMON'S RIGID LAMP BRACKETS

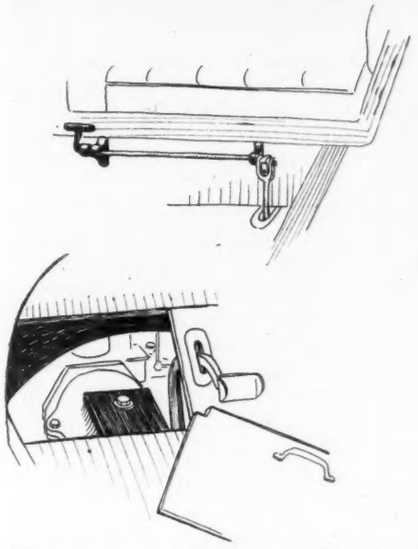




PRIMING FACILITIES OF RAMBLER INTAKE PIPE RAMBLER PLUG SWITCH, AND HOOD DESIGN

That Make Motoring Easier for Owners

Some Now Place Driver's Seat on the Left With Gear-Shifting Levers in the Center—Lamp Brackets Are of More Substantial Nature—Engine Starting Made Easier by Ingenious Devices



McFarlan Cutout Control and Foot-Board

the fuel, now generally obtainable, makes more efficient starting facilities a necessity, and there are few if any motors this year that are not at least equipped with priming cups.

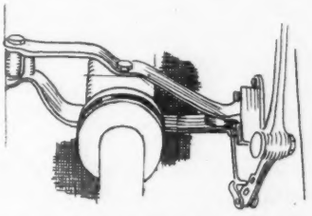
Priming Scheme on Rambler

Rather an unusual means for priming the motor is to be seen on the Rambler cars; there are two winged plugs arranged at the bends of the inlet pipe, which can be readily removed for the injection of liquid gasoline. There also is a third plug at the separation of the main portion of the inlet pipe which is designed to make adjustment of the carbureter easier, by regulating the air in the mixture.

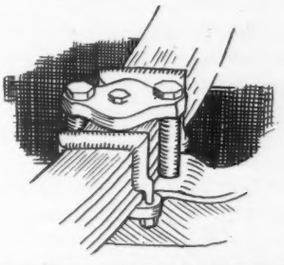
The means employed on the Rambler cars of eliminating the naked cable arrangement over the motor cylinders, is continued, and it is worthy of attention because of the advantages it affords the operator of the car when changing or testing of the spark plugs is required. The high-tension cables which are carried in an insulating tube passing over the cylinder heads, are connected to the spark plugs by means of switches or levers into which they extend; these switches rest on the terminals of the spark plugs, and are provided with insulated handles so that they may be readily raised and the connections broken.

Bonnet Construction Features

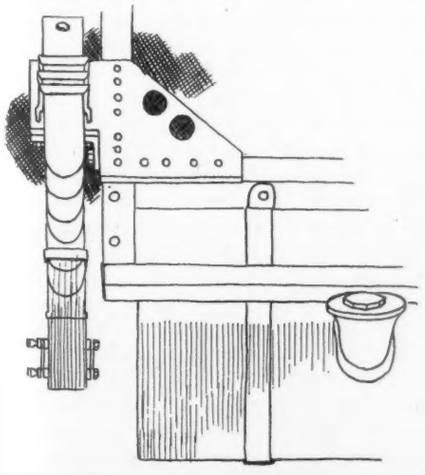
In the same illustration in which one of these switches is illustrated, the new Rambler bonnet construction is also shown. The lower portions of the bonnet on either side of the motor are hinged to the frame and may be lowered after loosening two thumb clips. This construction makes the upper portions of the bonnet less unwieldy and prevents it from rattling.



Halladay Clutch Control Mechanism



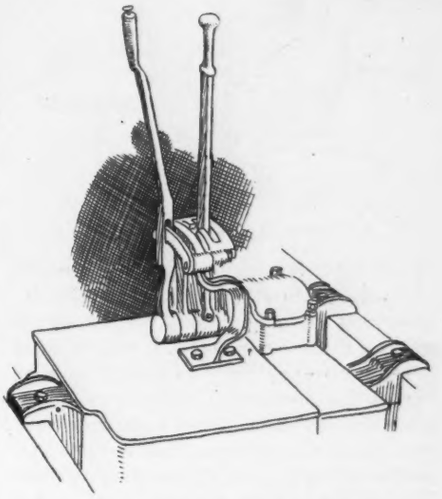
Special Spring Clamp on Enger Car



Diamond T Gusset Plate Spring Seat

Operating the Cutout

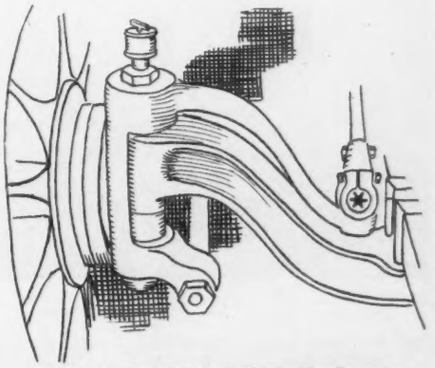
Up to a year or so ago practically the only means of opening and closing the muffler cutout of a car was by means of a pedal, and most of these pedals had to be held down by the foot as long as the driver desired that it should be open. Now there are few cars that have no means of securing the cutout in either the open or closed position, and often a more suitable means of operating the cutout is provided than by the use of a pedal. An illustration of such a means is shown in which the muffler control mechanism is fitted to the front of the lower front seat panels with the operating lever in the center where it may be easily manipulated by either of the front seat passengers. This permits of easy removal of the floor boards when inspection, adjustment or lubrication of the clutch or gearset mechanisms is required. In the same illustration, a readily removable footboard is shown; this is another commendable feature of a number of cars this year, as it gives easier access to mechanisms beneath and encourages that they receive more regular attention.



Enger Control Levers on Gearcase

Clutch Brakes Are Seen

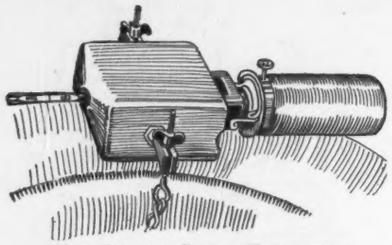
The clutch brake, adapted to retard the spinning of the clutch when released and thereby facilitate gear-changing, is to be found in many varieties on many cars; and the operation of the clutch pedal requires much less effort because of improvements in their leverage. Both of these improvements are exemplified in the new Halladay models. The clutch brake is comprised of two disks, a plain steel one and a leather-faced one, the one being secured to the clutch collar which revolves with the clutch, and the other being secured to the shaft which transmits power to the gearset. When the clutch is thrown out the disks are brought together and there is a tendency to equalize the speed of both shafts.



Diamond T Steering Knuckle Design

Tire Repair is Becoming More Important to the Motorist

Vulcanizers Are Popular, Main Efforts of Makers Having Been Centered in Making Them More Portable and To Reduce the Number of Parts—Two Types of Them Manufactured



THE EMPIRE STEAM VULCANIZER

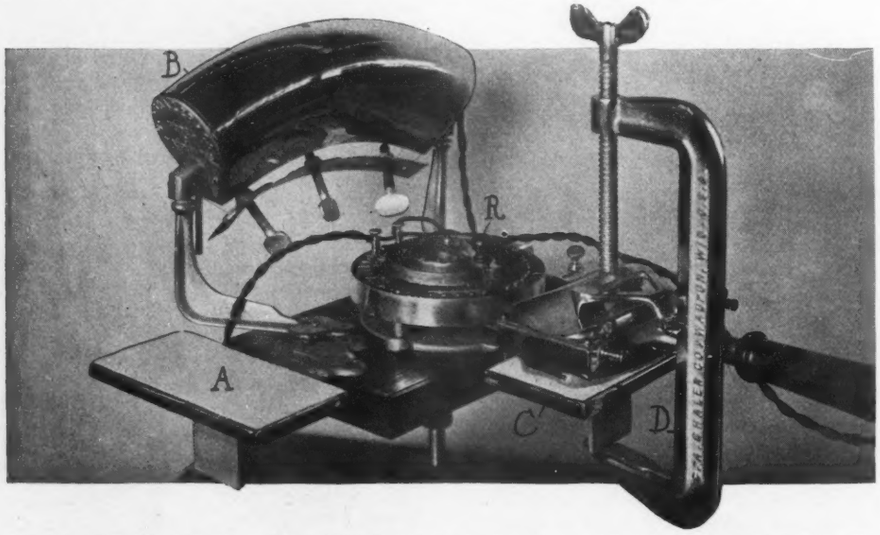
THERE have been many improvements in vulcanizers for the new year, the development seeming mainly to be toward making them more portable and making fewer parts applicable to a greater range of work. The electrically-heated vulcanizers probably are the simplest to operate, but are open to the objection that electric current is not always available when needed. Those heated by gas are open to the same objection except where they are arranged to be operated from the acetylene generator or gas tank, in which case repairs can be made at almost any time on the road. Other vulcanizers are designed for use with a gasoline torch or alcohol burner, and are portable in every respect.

Features in the Shaler Vulcanizer

The C. A. Shaler Co., manufacturer of the Shaler vulcanizers, has made several improvements for 1911. Perhaps the most important feature is the automatic thermostat for regulating the temperature to keep the vulcanizer exactly at the correct heat without any watching or attention by the operator. This really amounts to an automatic rheostat in the electrical vulcanizer. On some of the electric vulcanizers for work on cuts in casings and inner tubes the vulcanizing surface has been enlarged, so that it is now possible to treat two tubes at the same time. The wooden shelf formerly furnished, on which the inner tube is vulcanized, has been supplanted by a metal shelf with an asbestos pad, which prevents the radiation of the heat and shortens the time required for the process.

A self-adjusting swivel clamping device takes the place of the bolts formerly used for obtaining pressure when vulcanizing an inner tube, and also takes the place of the change in bolts used when cleaning the casing. By means of this the vulcanizer can be applied to a tire in a few seconds and an absolutely uniform pressure on all parts to be repaired assured. A new plate has been added for vulcanizing casings. This is of a kidney shape, its peculiar shape allowing the operator to get clear down to the rim for repairing rim cuts. The plates have a double concave face which gives an extra large surface for work on casings. A tread-vulcanizing attachment has been added to the Shaler line, so that sectional repairs of any size can be made, the heat being applied to the inside and outside of a tire at the same time.

The latest addition to the Shaler line is the Stitch-in-Time vulcanizer. This is manufactured under the basic patents formerly owned by the Stitch-in-Time Vulcanizer Co., with a number of improvements. The vulcanizing area has been greatly increased, and an improved alcohol lamp supplied. The Shaler handle has been incorporated with the machine so that the vulcanizer may be heated while a tire is being repaired and so that it can be moved without turning off heat.

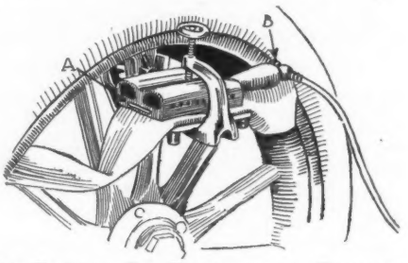


ONE OF THE SHALER ELECTRIC VULCANIZING OUTFITS. A, PLATE FOR INNER-TUBE WORK; B, HEATER FOR WORK ON CASINGS; C, ASBESTOS PLATE; D, CLAMP; R, AUTOMATIC RHEOSTAT BY WHICH HEAT IS REGULATED

While some of these electric vulcanizers are meant for the use of garages and repair shops, some of them are intended to be carried in the car and used for emergency repairs when current can be obtained.

Gibney Eleck-Trick Vulcanizer

The Gibney Eleck-Trick vulcanizer is a portable vulcanizer for making tire repairs and consists of nickel-plated cast steel containing the heater with its electric coil, an asbestos pad, an operating board, a special U-clamp which may be used for clamping the plate to the tire either on the wheel or on the operating board. The vulcanizer can be used with direct or alternating current and can be obtained in standard sizes for 110 volts



THE ECONOMY GAS VULCANIZER, A, THERMOMETER; B, GAS VALVE

or 120 volts. The vulcanizer has a thermometer to register the heat and a thermostat which will maintain a temperature at any desired point, from 275 degrees to 300 degrees.

Economy Vulcanizer

The Economy vulcanizer, marketed by the Garage Equipment Mfg. Co., consists of a vise, a smooth plate on which to lay a tube while preparing a patch, a hot plate having a flat surface for inner tubes, and a concave surface for outer casings, and a yoke to clamp the hot plate to the casing. The heat is obtained by burning gas from the gas tank or acetylene generator. This point appeals to users who wish to make repairs on the road. The temperature is clearly indicated by a thermometer, the heat is controlled by opening and closing a small gas cock, and the cost of heating is claimed to be much less than that of other vulcanizers. The time required to bring the cold instrument to the vulcanizing temperature is about 5 minutes. A special feature of this device is the combination clamp and vise by means of which the inner tubes may be repaired without even taking them from the wheel. The vise with the plate is clamped to the spoke and repairs of inner

Tire Vulcanizers and Protectors Coming to the Fore

One of the Systems Uses Electrical Heat While Another Depends upon Gas—Some of the Others Utilize Gasoline Torches and Alcohol Burners—Descriptions of the New Things

tubes can be made at any time on the road. Such an emergency repair when made in time often lengthens the life of the tire very much, and is more than worth the trouble involved.

Pittsburg Steam Portable Vulcanizer

Several vulcanizers are on the market which operate by the use of steam. Adherents to this type claim that since steam gives a moist, steady, even heat it is better for the purpose than other vulcanizers in which electricity or other dry heats are used. The Motor Tire Repair and Supply Co. believes that in its portable vulcanizer it has a very easily portable and efficient outfit. A steel boiler is used in which about ½ pint of water is generated into steam, the required pressure can be raised in 5 to 10 minutes, and two vulcanizing plates are connected by a quick-acting coupling to which water may be added when necessary and by means of which the case vulcanizer may be placed at any desired angle so as to reach all parts of the tire. Either a steam gauge or a thermometer is supplied for determining the correct heat.

Another steam vulcanizer is marketed by the Empire Auto Specialty Mfg. Co. This device is very compact, the entire apparatus being contained in one unit which is clamped by means of chains to the casing. The fuel tank, boiler, and burner can be easily separated from the heating plate when necessary, and a thermometer protruding beyond the heating plate registers the temperature, the latter being easily regulated by means of a thumb screw on the burner.

Vul-car Vulcanizer

Another new portable vulcanizer, which uses steam as a heating principle, is the Vul-car New Process vulcanizer. This consists of a heating plate having a concave and a flat side for either casing or inner-tube work and provided with clamps for holding it on the wheel or for holding the tire to the plate. Steam is formed in a small, flat boiler by burning wood alcohol in a burner which is placed under the plate.

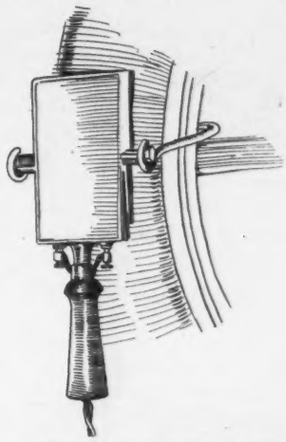
In line with the oft-repeated instructions of the tire makers to use as large tires as possible are the warnings against permitting small cuts and holes in the outer casings to grow. If not attended to as soon as discovered, these cuts are almost certain to become larger and deeper. This will not only result in weakening the outer casing, but will cause blow-outs which may destroy both the casing and the inner tube. For this reason tire repairs should be made as soon as worn spots or cuts appear on them.

Dover Tire Testing Tank

The Dover Stamping and Manufacturing Co. is marketing a special tank for testing tires, which will prove a great convenience to every user of a vulcanizer or anyone who has occasion to test for leaks in tire tubes. The tank is in the shape of a segment of a circle and will correctly fit the largest-sized tire. When the tank is filled with water and the tire immersed therein, a leak will be shown by bubbles rising to the surface. A rod is fastened to the tank, the top having a fork which fits the tire, so that the tube is supported and allows the free use of both hands. The rod slides in a brass clamp and is adjustable to different sized tubes. The pan is made of heavy steel, double seamed construction with heavy wire around the top, and is galvanized after it is made in order to prevent rust.

New Tire Protector

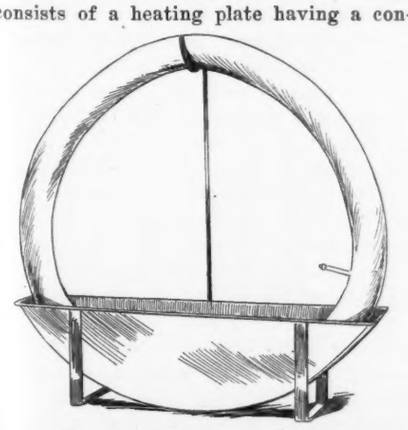
The Universal Tire Protector Co. presents a new tire cover whose chief novelty lies in the method of attachment. The improved anchorage consists of a pair of tension bands, each of which is made in two segments. Each segment is passed around and through a series of closed steel loop hooks along the margin of the tread, the two segments being connected by lock connections permanently attached to each side of the tread. The tread is drawn over the tire to any desired degree of tension, and the anchorage holds it at this point, and holding the tread in perfect contact with the entire surface of the tire. As for the tread itself, it is made of heavy chrome tire leather reinforced over the wearing surface and clad with an armor of heavy steel stud head rivets. This company also is marketing an emergency tire sleeve which is mechanically anchored and adjustable, and is treaded like the tire cover.



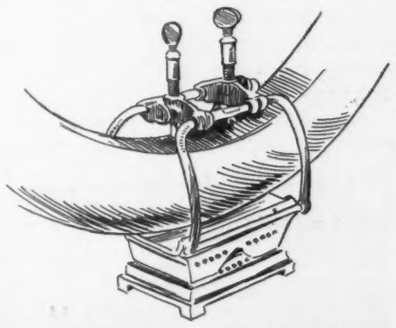
THE GIBNEY ELECK-TRICK VULCANIZER

Ideal Twin Sleeves

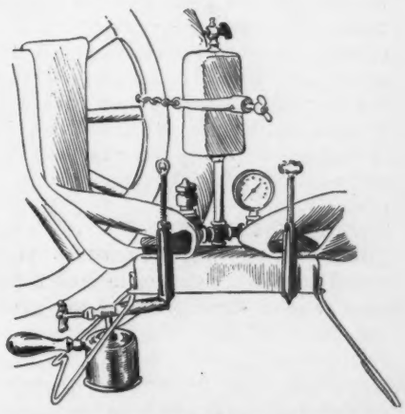
A novelty in the line of tire repairs is a sleeve designed to permanently as well as temporarily provide against blowouts and rim cuts in tire casings. It is called the Ideal twin sleeve and consists of an inner sleeve and an outer jacket, the latter with a wearing tread surface. The inner section of the twin fits the inside of the casing, and placed inside the shoe. Both flaps being pulled out under the beads of the casing. The outer section of the tread is carried up over the shoe and placed between the casing and the inner sleeve.



THE DOVER TIRE-TESTING TANK

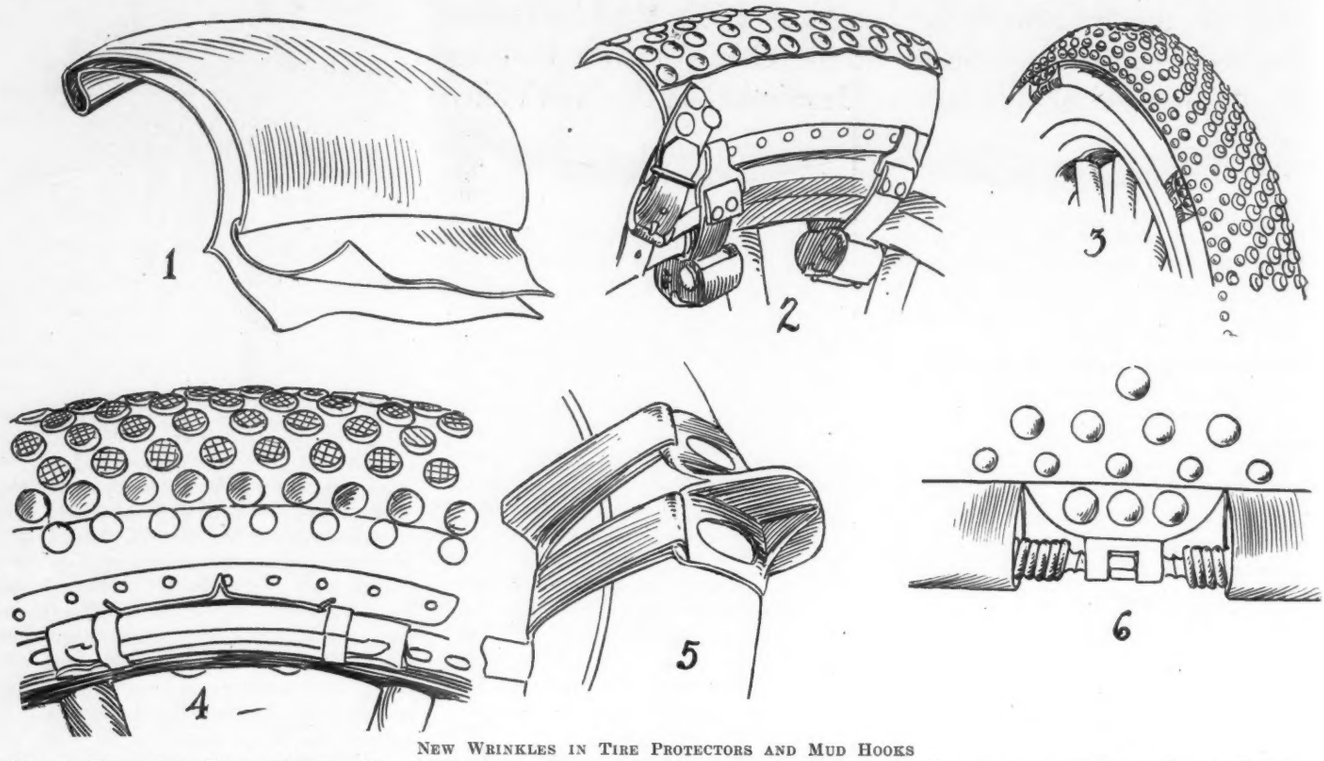


VUL-CAR STEAM VULCANIZER IS PORTABLE



PITTSBURG PORTABLE STEAM VULCANIZER

Attachments for Tires in Emergencies and Every-Day Use



NEW WRINKLES IN TIRE PROTECTORS AND MUD HOOKS

FIG 1—THE IDEAL TWIN SLEEVE FIG. 2—UNIVERSAL EMERGENCY TIRE SLEEVE FIG. 3—THE NEW WOODWORTH TREAD FIG. 4—THE UNIVERSAL TIRE PROTECTOR HAS A NEW METHOD OF ATTACHMENT FIG. 5—THE GARAGE EQUIPMENT COMPANY'S MUD HOOK FIG. 6—DETAIL OF TURNBUCKLE SCREW OF WOODWORTH TREAD

THE 1911 Woodworth tread is made of chrome leather reinforced with fabric and studded with steel rivets. It is held on the tire by circular rings on each side made of coil springs. The treads do not come down to the rim and are not connected with it, so that they could be used on any make of pneumatic tire and the tire can be taken off the rim without disturbing the tread. The main part of the tread covers that part of the tire which comes in contact with the road. Along the edges of this are riveted leather loops extending about 1-inch farther toward the rim. The loops are about 8 or 10 inches in length and from six to ten are used on each side for the entire circumference. In these loops are coil springs which hold the tread on the tire. Between the ends of the loops, which are about 2 inches apart, are fastened turnbuckle screws by which the springs are connected and adjusted. These screws are about 3 inches long and are of the regular turnbuckle style with a left-hand thread on one end and a right-hand thread on the other, but the threads are shaped to screw into the ends of the spring.

Ideas In Mud Hooks

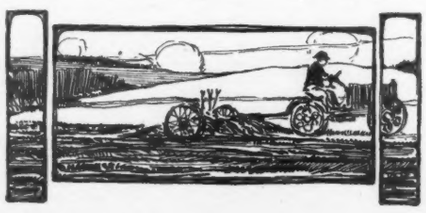
Many devices are resorted to to prevent the wheels spinning in mud holes or sand or snow banks. One of these for an emergency of this kind is the mud hook for pneumatic tires, made by the Garage Equipment Mfg. Co. and is arranged to be strapped on the tire over tire covers or chains, as the case may be.

Woodworth Tread One of the Devices Put Out—Mud Hooks To Stop Wheels Spinning—Jacks of New Types Shown

In the line of jacks for motor cars several new designs are being offered, one of the most recent of these being the Hartford jack. It consists of a train of three gears and a rack. One of the gears is operated by lever with a ratchet which meshes with the large gear on the shaft of which is a still smaller gear meshing with a vertical rack, which does the actual lifting. This gives the equivalent of a very long lever arm with a rather short stroke. The gears and rack are specially hardened for the purpose and the tool is mounted upon a hardwood base to give perfect stability. Tests have shown that a 30-pound pressure on the handle will give approximately three times as much lifting power as upon the ordinary jack. A unique reversing lever on the front is easy to reach and easy to operate.

Gear and Screw Type

A special jack designed for heavy machines is the Ideal, made by the Elite Mfg. Co. This is of the gear-and-screw type and has enough load capacity to lift almost the entire car if desired. A double-acting jack is just the same as the Ideal, except there are two side gears instead of one, making the operation more rapid as the load is lifted upon both the up and down strokes. The combination of the screw-and-ratchet types of jacks is the automatic jack, in which the bar can be raised instantly to the axle and after the load is released will automatically drop to place. It can be raised any fraction of an inch and is self-locking at any point.



An automatic screw jack made by the Garage Equipment Mfg. Co. has an ingenious feature of a quick release jaws, which permit of instant adjustment of the head to the height of the axle, and does away with the slow pumping or screwing process necessary for this operation in most other jacks of the screw type. The quick release jaws also permit of instant collapse of the screw and renders it unnecessary to go through the pumping or screwing operation to lower the jack.

Oliver Peerless Jack

The Oliver Peerless jack is lighter and more durable than the old model. It is of the rack-and-pawl principle and has a hollow swivel top which will catch under a bolt or nut without danger of slipping. The handle is removable and is shaped to make an excellent tire tool. In lifting the handle is worked below the horizontal. In lowering it is turned over to work above the level.

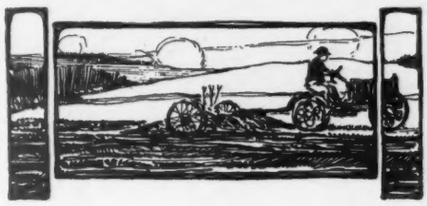
Lifting Jacks for the Motor Cars in Many Forms

A tool made by the National Jack and Mfg. Co. is made with two barrels, one inside the other, giving it both the adjustable feature and the lifting power of the screw jack. The screw wheels and lever are all fastened to the inside barrel. In operation the lever is lifted up until the head of the screw strikes the axle. The usual pawl is fitted on the outside of the main barrel and engages each notch on the inside barrel as it is lifted up. The lifting screw is operated by means of bevel gears. Both up and down motions are provided for by pressing the pawl hook up or down.

A rapidly-acting jack is made by the same company and is called the Justrite. One stroke of the lever will raise the car 2 inches. It is adaptable to any height and has two lifting heads for either the axle or the hub of the wheel.

Double-Ratchet Jack

The Pratt motor-car jack has a double ratchet in the shape of an S. One of the ratchets being pivoted on two cross braces about midway of the stand, the upper end engaging with the tooth of the lifting bar,



and the other end with a small catch which throws it out of engagement. The other ratchet is operated by the lever and the actual lifting is done with it.

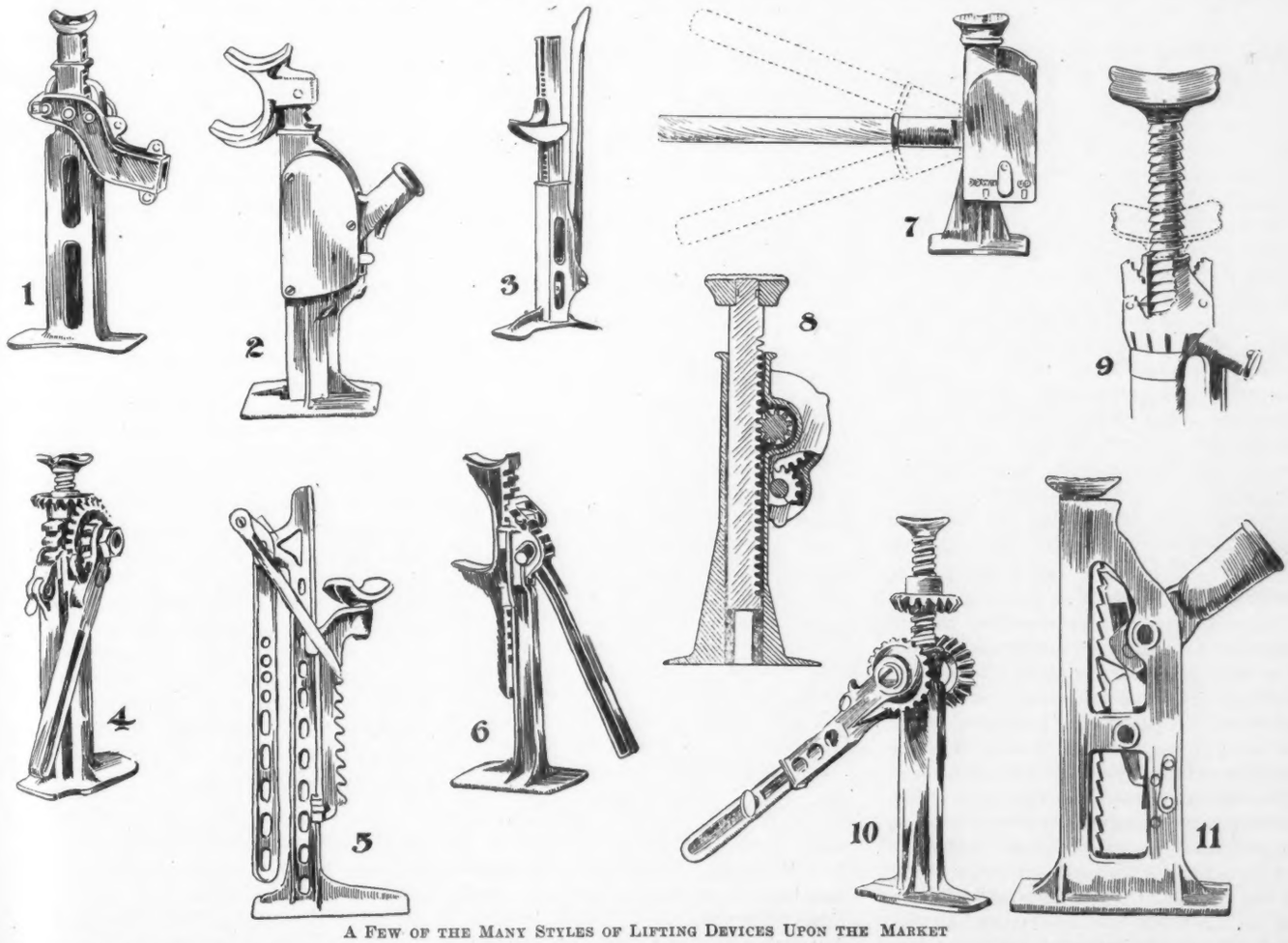
Raises the Entire Car

A jack device to raise the entire car and eliminate the pit is manufactured by the C. E. Travis Co. Four of them are required for raising the whole car, but where only one axle is to be raised only one or two are needed. The jacks are applied under and astride the tire from the side of the wheel. A double crank elevates the wheel which is held between the two lifting arms. When the car is elevated the tires clear the floor 34 inches, which with the added height of the wheels gives easy access to all parts.

A rather unusual departure in the line of jacks is the manufacture by the Lovell-McConnell Co. and is called the Raiswell. It is operated by means of a jointed extension handle, like that of a brace and bit, and gives a ratio of power increase of about 6 to 1. The jack itself consists of a steel-threaded shaft which turns in the housing, and is actuated by a bevel gear which is turned by the brace handle.

A jack having a unique feature is made by the Cook's Standard Tool Co. The top of this jack is shaped to reach in over truss rods and grapple the axle. As this special feature extends below the actual end of the bar it is valuable in lifting a car out of hole where another jack would be too high.

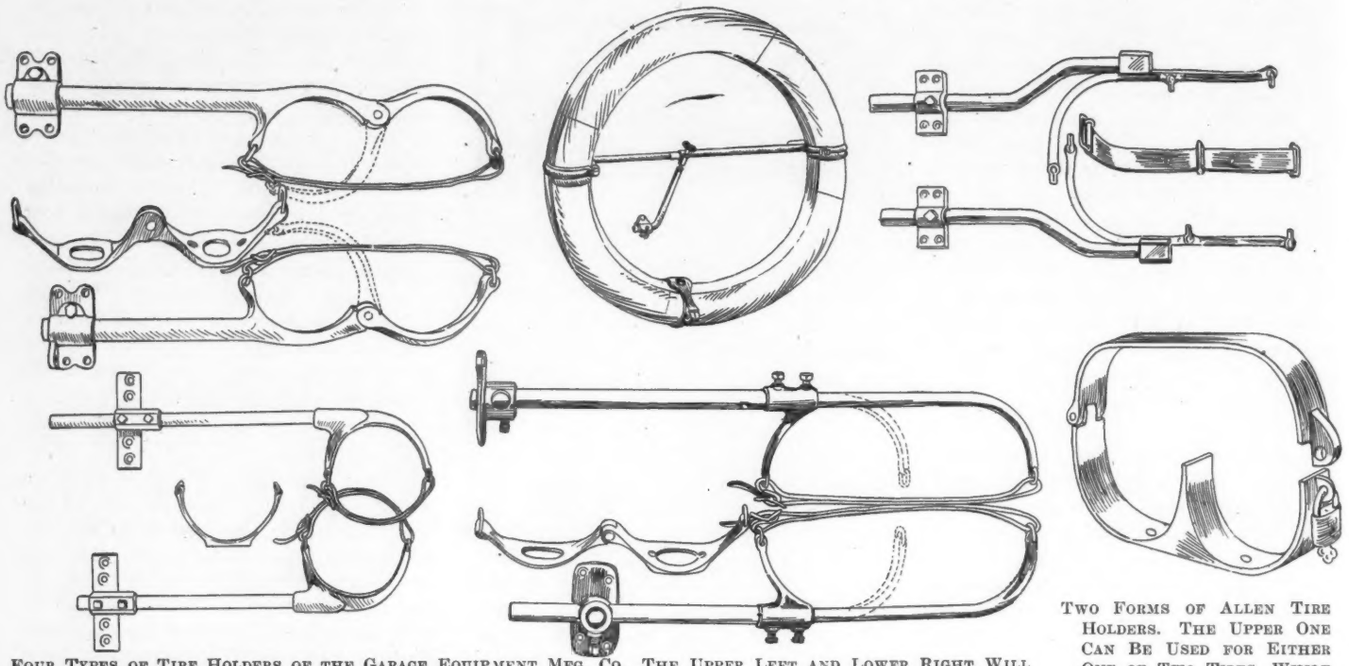
Another class of jacks includes the tire-savers. These are made by nearly all the manufacturers of the other types and are designed to keep the weight of the tires off the wheels when the car is not to be used for any length of time. They are all made along much the same lines, the one shown in Fig. 5 serving to illustrate their construction.



A Few of the Many Styles of Lifting Devices Upon the Market

Fig. 1—The Peerless Ratchet Jack. Fig. 2—A Jack of the Standard Tool Company with a Double Head. Fig. 3—One of the Oliver Designs. Fig. 4—National Jack Manufacturing Company's Combination Screw and Gear Type. Fig. 5—Elite Tire Saver. Fig. 6—The National Double-Head Jack. Fig. 7—Hartford Suspension Company's Auto-Jack. Fig. 8—Mechanism of Hartford Jack Fig. 9—Novel Design of Garage Equipmpnt Manufacturing Company. Fig. 10—Elite Gear-and-Screw Jack. Fig. 11—The Pratt Double-Ratchet Jack.

Tire-Holders Show Many New Features For This Year



FOUR TYPES OF TIRE HOLDERS OF THE GARAGE EQUIPMENT MFG. CO. THE UPPER LEFT AND LOWER RIGHT WILL HOLD EITHER ONE OR TWO TIRES. THE ONE SHOWN WITH THE TIRE IN PLACE WILL TAKE TIRES OF ANY DIAMETER AS THE ARMS ARE TELESCOPIC

TWO FORMS OF ALLEN TIRE HOLDERS. THE UPPER ONE CAN BE USED FOR EITHER ONE OF TWO TIRES, WHILE THE LOWER ONE CAN BE LOCKED

MOTOR car users are becoming more and more convinced of the necessity of carrying spare tires ready inflated and ready to be mounted on the wheel or placed on the rim in case of puncture or other tire trouble on the road. The rapidly increasing use of detachable tires and demountable rims has resulted in many improvements in the line of holders by which these ready-inflated tires may be carried on the car.

The holders this year show more symmetry of design, more durable finish with better arrangements for rapid and secure mounting and unmounting. A very commendable feature which is noticed in many of the tire holders for this year is the method of making them interchangeable for tires of practically any size, while some makers go still further and arrange a set of holders so that they may be used for either one tire or two, as desired.

Locking Tire Holders

Another development this year in tire holders is the more extensive use of holders which may be locked to prevent the theft of tires from the cars. One of these is the Gilbert lock tire holder, in which a bar passing over the top of the tire slips over an extension of the lower shoe. This extension has holes through which a padlock may be slipped securely, fastening it in place. A lockable tire holder, in which a slightly different method is used, is one of the Allen tire locks. In this a lug on the upper bar is bored and slotted to slip over a projection on the lower portion. This projection also has a hole through it which coincides with the holes in the lug on the upper portion. When a padlock is slipped through this it is impossible to remove the tire. Both of these tire holders are made for either one or two tires, but in place of the hinge used on the Allen the Gilbert holder has its upper bar slipped through in the lower portion, and is raised straight up to remove the tire. In the Turner tire holder the tires are held in place by means of a strap passed through loops on each side of the yoke. This method of holding the tire is a favorite one with most makers of these holders and one or two tires may be carried, as desired.

Necessity of Having Spare Tires Now Firmly Impressed Upon American Motorists

Holders for Demountable Rims

The use of demountable rims has made necessary the designs of special holders and some of these show novel features. One of them, which is arranged for spare wheels as well, can be used for either a single rim or wheel, or for two rims or wheels, one portion of the holder holding back and becoming either the bottom of the holder for the second rim, or the top of the holder when only one rim is carried. This is made by the Garage Equipment Mfg. Co. This company also is marketing some adjustable tireholders in which the arms telescope to accommodate either large or small tires. When properly adjusted the arms are all locked by tightening a wing nut, the hinged ends permit of carrying either one or two tires.

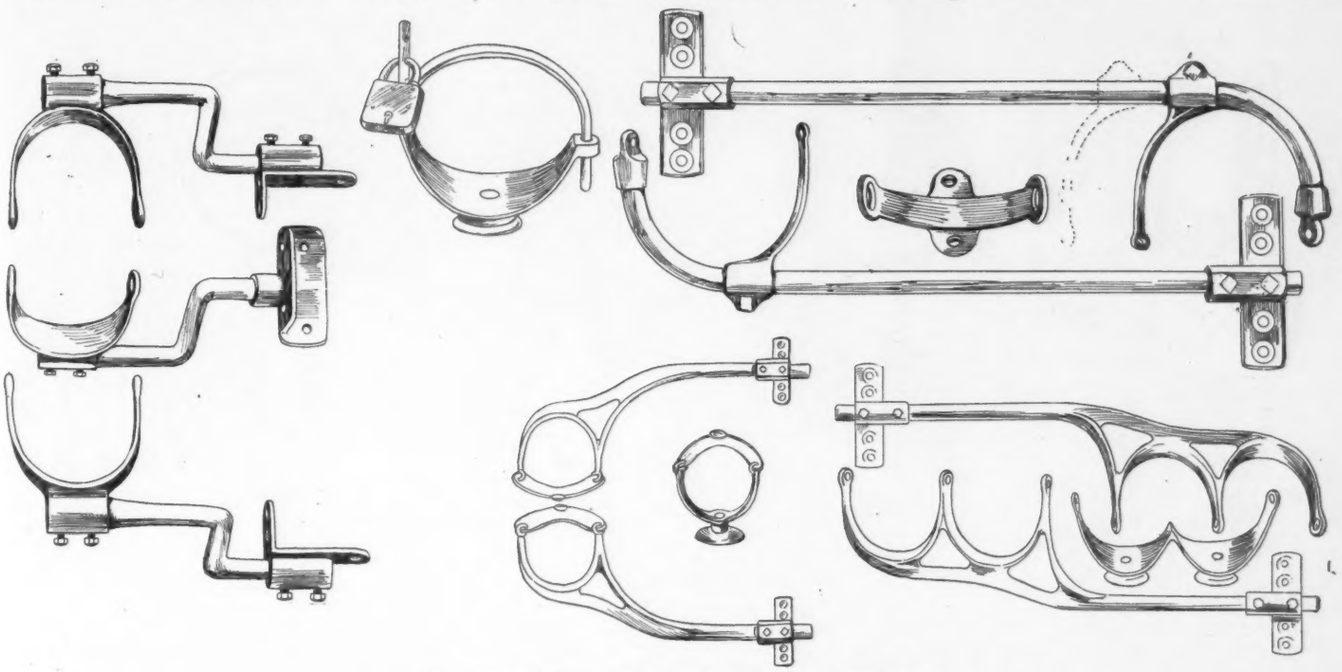
Adjustable Tire Holders

In the line of adjustable tire holders, which may be used for any size tires, the Gilbert holders show a novel method of accomplishing this result. The bar carrying the tire yoke instead of being straight, or nearly so, as is usually the case, is bent in the form of a Z. One end of the bar fits in a round connector on the yoke and is held there by set screws, so that by loosening the set screws the yoke can be turned about the bar. The other end is held in a similar connector in the same way on the bracket that fastens on the car, so that the yokes may be set for any size tire by merely loosening the set screws and turning the rod and the yoke to decrease or increase the diameter. Another form of Gilbert tire holders is the telescopic tire holder, in which any number one, two or more tires may be carried at the same time. To accomplish this result one half of the yoke slips backward on the bar, which is bent around to form the other half of the yoke. The former is held in place by means of a square-headed set screw, which holds it in position. The length which the holder extends beyond the bracket may be adjusted by slipping the rod through a connector as far as desired and tightening up two set screws which hold it in place.

Allen Adjustable Holder

In one of the Allen tire holders the same results are accomplished in a slightly different way. One side of the tire yoke is dropped down when it is desired to carry two tires and a strap cast over both of them. The distance of the yoke from the car body may be regulated by means of a bracket through which the rod slides, it being held in place by a set screw.

More Efforts Are Made Toward Adjustable Holders



SOME OF THE MANY FORMS OF TIRE-CARRYING FIXTURES

THE ILLUSTRATION ON THE LEFT SHOWS A GILBERT HOLDER ADJUSTABLE FOR ANY DIAMETER OF TIRE. IN THE MIDDLE ROW THE UPPER VIEW SHOWS A LOCK-HOLDER OF THE SAME MAKE. THE LOWER ILLUSTRATION IN THE MIDDLE IS ONE OF THE TURNER HOLDERS, WHILE ON THE RIGHT ARE SHOWN TWO GILBERT HOLDERS, THE UPPER HOLDING ONE OR TWO TIRES

Still another adjustable type of tire holder is that which is manufactured by the Western Brass Co. In this tire holder no yokes are used, the tires being held in place by a strap which passes around the tires and through a hole in the end of the rod and also through a hole in a sliding block on the rod. The rod is drilled with a series of holes and the block is held in position for the desired number of tires by means of a spring latch, which causes a peg to set in the holes and thus hold it stationary.

An adjustable tire holder, which also has the locking feature, is manufactured by the Alexander Mfg. Co. This combination of the adjustable and locking features is accomplished by the use of a holder, in which one side acts on a hinge and can be swung either into position to form the top part of the holder for one tire, or down, to form the base of the holder for a second tire. The ends of the yoke are provided with comparatively large holes, through which a chain passes and is held by a padlock.

New Tire Gauge

In spite of the obvious advantages of keeping close watch upon the state of an inflation of the tire comparatively few motorists are provided with any means other than their sense of touch for knowing the pressure of air in the tires. This probably is due to the fact that many of the gauges for registering air pressure are awkward to carry around and somewhat difficult to attach. There are several pressure testers or pressure indicators upon the market which are not intended for permanent attachment to either the tire or pump, but which may be carried in the pocket or in the tool box. Some of these are constructed much like the regular round dial gauge, while others are shaped much like a pencil and intended to be carried in the pocket.

New Tire-Holders Are Both Locking and Adjustable — Pocket Pressure Tire Gauges

One of the latter kind is the Allen tirometer and is operated by merely pressing one end of the gauge on the valve stem of the tire. When this is done a rubber washer in the end fits over the rim of the valve at the same time opening the valve plunger and permitting the air to escape into the gauge. The pressure of the air compresses the spring which is forced up to a point corresponding to the pressure in the tire. A plunger attached to the spring raises a sliding band which through a slight friction holds its position, thus retaining the indication after the gauge has been removed from the valve so that it may be read after taking off from the tire. The gauge is reset for another reading by slipping the indicating band to the bottom of its travel. In appearance the tirometer is about the size of a lead pencil and is made of nickel-plated brass tubing.

Economy a Pocket Gauge

Another pocket tire gauge is the Economy gauge. This is cartridge-shape and has a plunger extending beyond one end which is graduated to correspond with the tire pressures. When it is placed upon the valve the plunger rises to the proper point, registering the pressure in the tire.

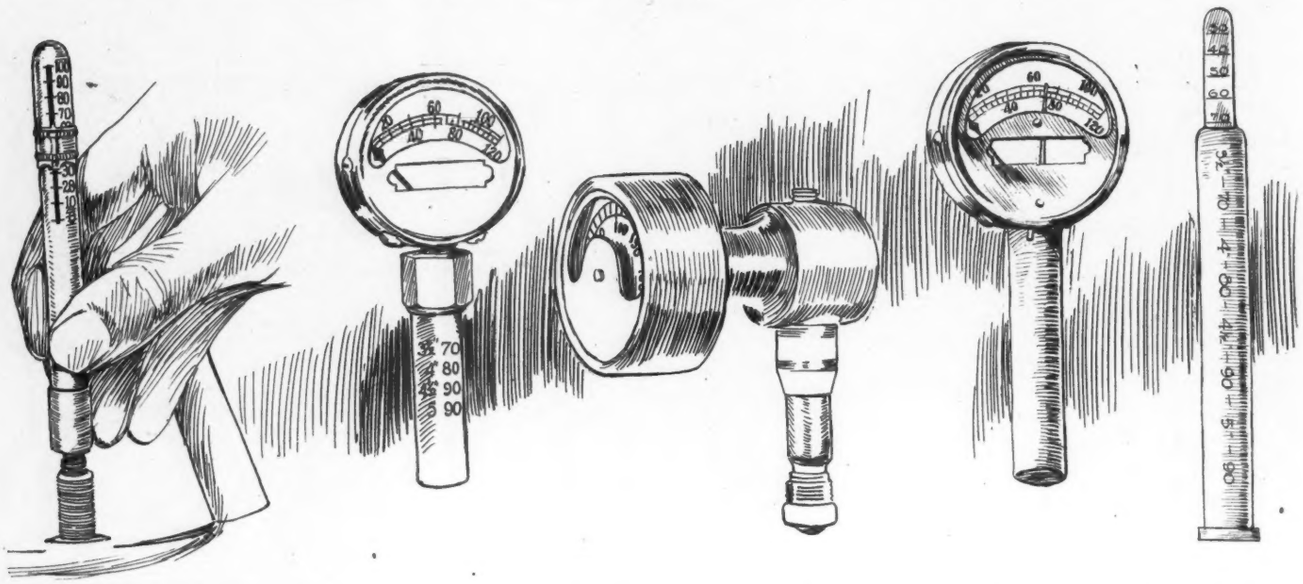
Other tire indicators which are merely pressed on the valve are the Dial type. One of this kind is the Edelmann. A stem extending below the gauge allows pressure to act on the spring which causes the pointer to move across the face of a graduated dial. To operate the valve cap is removed and the end of the gauge pressed over the tire valve. The hand remains at the maximum pressure until it is reseated by pressing a spring in the bottom.

A pressure indicator with some novel features is the Brown indicator which is also of the dial type. When placed on the tire valve it opens the latter automatically and the pressure is registered upon the gauge. If more air is found necessary the pump can be attached to the indicator and operated until the requisite pressure is shown.

Ten Eyck Tire Pump

An automatic tire pump arranged to be permanently attached to the engine and be operated from the flywheel is the Ten Eyck automatic tire pump. The automatic feature of the pump is noteworthy in that it is self-starting and self-stopping when the proper pressure is released and that it automatically makes contact with the flywheel of the engine. The operation of the pump is very simple. Attaching the hose to the tire valve starts the pump automatically, the back pressure in the tire throwing the pump into contact with the flywheel of the engine. When the desired pressure is reached, as indicated on a gauge which is part of the outfit, the

Pocket Tire Gauges Much Used To Test Tire Pressure



THE ALLEN TYROMETER THE EDELMANN POCKET TIRE GAUGE ONE BROWN TIRE GAUGE SCREWS ON THE VALVE BROWN POCKET GAUGE THE ECONOMY TIRE GAUGE

hose is detached from the valve and the pump automatically stops by being thrown out of contact.

If the tire is entirely deflated it is necessary to work a starting lever to throw the pump into contact, after which the tire pressure will keep it there. A pump is driven by friction on the flywheel of the engine and a special feature is the method employed to insure positive contact under all pressures. The pump body is hinged to a supporting arm and carries the friction wheel. Two cylinders are used, one the main cylinder in which the compression of the air takes place and the other the contact cylinder used to hold the friction wheel on the flywheel. When connection is made with the tire the back pressure forces the piston in the contact cylinder against the supporting arm and causing the pump body carrying the friction wheel to swing into contact with the flywheel. When the hose is detached the piston in the contact cylinder is relieved from pressure and the friction wheel swings out of contact.

Another feature is in the construction of the cylinder. This is made in two parts, one telescoping over the other, with an asbestos filler between. The increase of pressure on the piston forces the parts together and expands the filler against the walls of the cylinder sealing the joint between piston and cylinder absolutely and when the air pressure is removed the piston draws apart allowing it to move freely in the cylinder.

Skinner Pneuflator

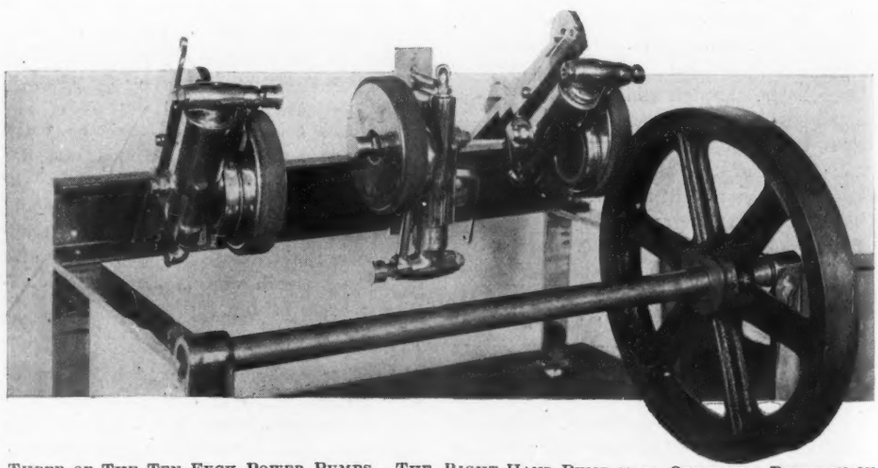
The Skinner pneuflator is one of the type of pumps in which the compression of the engine is used directly to operate the piston of the air pump. The pump is made with a large and a small piston. When

a tire is to be inflated the spark plug of one of the cylinders is removed and the pump screwed in the cylinder in its place. In the bottom of the pump is an automatic air intake valve allowing the cylinder, to which the pump is attached, to take in a full charge of air, while the other cylinders of the engine get a charge of gasoline from the carbureter. The full charge of air gives that cylinder a full compression, which pushes the larger piston in the pump upward. The suction stroke pulls the piston of the pump downward and air is forced into the tire on both the up and down strokes. The only moving part to the pump is this double piston which is loose in the pump cylinders and works in unison with the piston of the engine cylinder. Air is drawn in through holes in the shoulders of the pump cylinders, supplying the pump with pure air and using the rest to cool it. The pump will produce a pressure of 150 pounds and will inflate any tire in from 2 to 4 minutes. Recent changes in this pump are the provision of an air cushion on the up and down stroke, doing away with the knocking of the pump and the liability of breaking a piston.

A power tire pump, which is applied to the driving axle, is the O. B. pump marketed by Oscar M. Bergstrom which is designed to be operated from the rear hub, but can also be fitted to the motor. A crank disk is mounted on large ball bearings, there are two pistons, one piston in each of two opposed cylinders which compress the air for the tires.

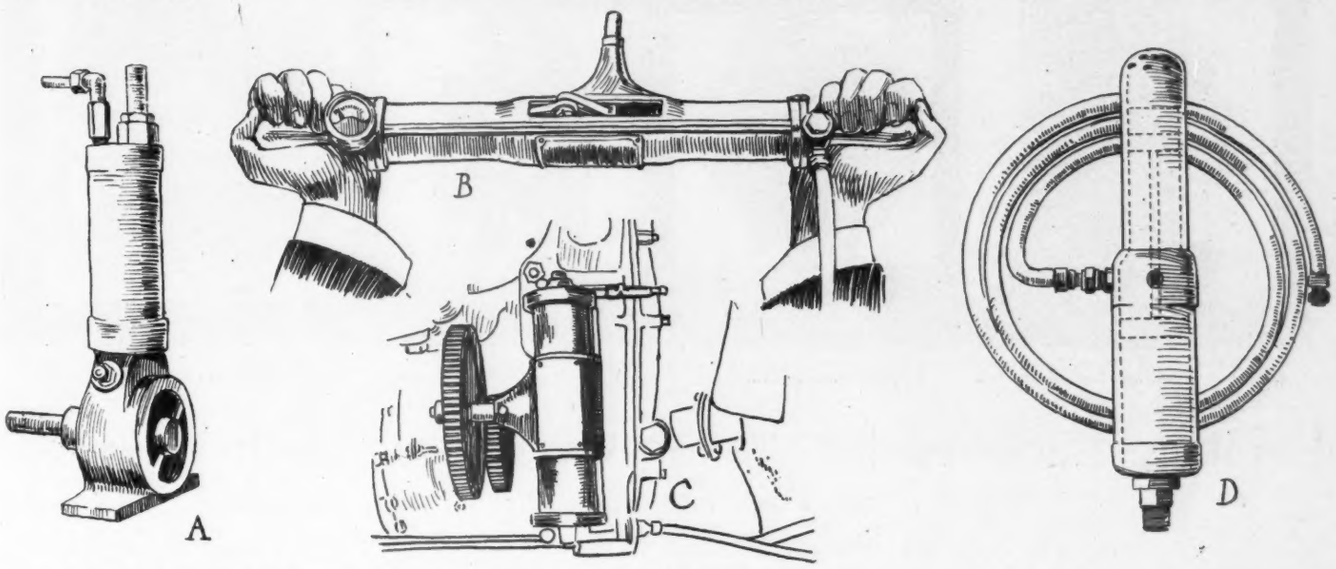
Hanna Power Air Pump

Another pump intended to be driven by the engine is the Hanna air pump which



THREE OF THE TEN EYCK POWER PUMPS. THE RIGHT HAND PUMP IS IN OPERATING POSITION ON THE FLYWHEEL OF THE ENGINE

Pumping Tires By Hand Is Now Going Out of Fashion



SOME OF THE DIFFERENT FORMS OF POWER PUMPS TO BE CARRIED ON THE MOTOR OR IN THE TOOL BOX. A, THE O. B. PUMP TO BE GEARED TO THE MOTOR; B, THE SPENCER IS NOT ATTACHED TO THE MOTOR; C, THE HANNA POWER PUMP IS PERMANENTLY ATTACHED ON THE MOTOR; D, THE SKINNER PNEUPLATOR IS SCREWED INTO A SPARK-PLUG HOLE

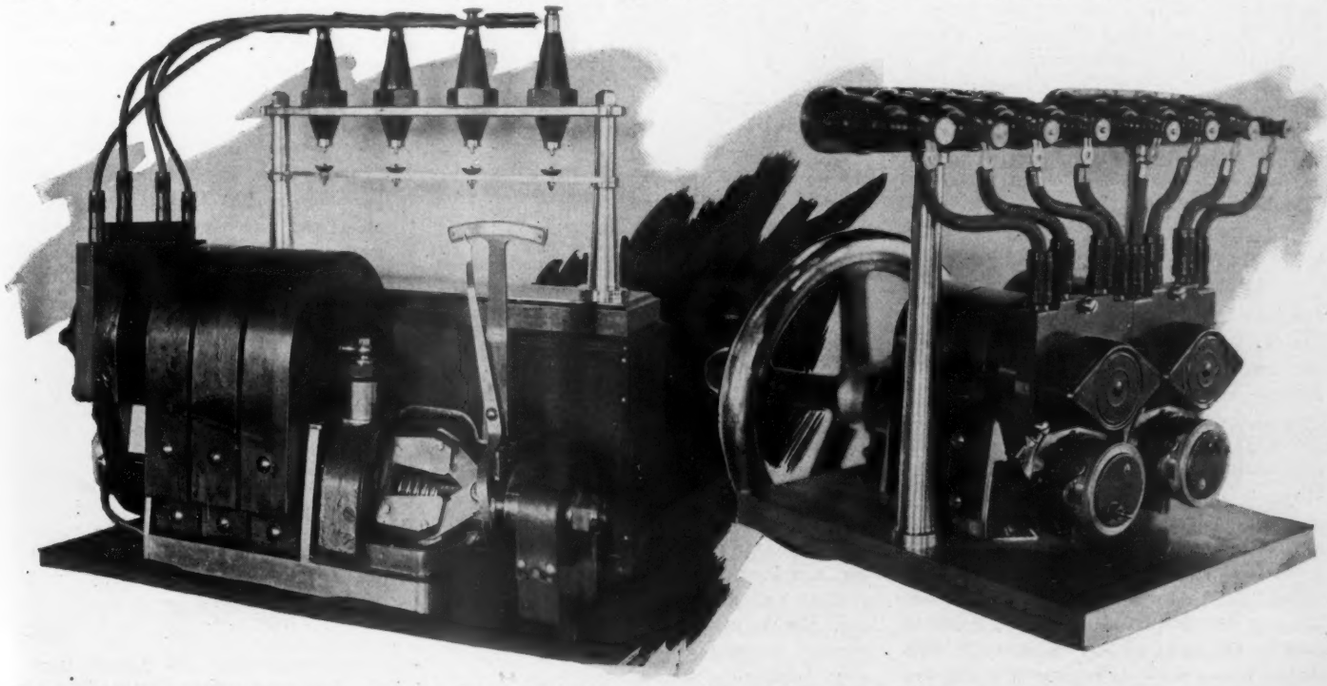
is of the two-cylinder opposed type. The body portion comprising the two-cylinders is a single casting of phosphor bronze. Steel pistons are used, each having a pair of piston rings. The pump is driven by gearing from the camshaft of the motor and a tire can be inflated by it in from 3 to 4 minutes. The car upon which it is placed determines to some extent its method of attachment to the motor. On Pierce-Arrow cars the pump is bolted to the frame in a vertical position and driven by a sliding gear on the water pumpshaft. With the Packard 30 it is not necessary to drill any holes in any part of the car, as it can be attached in a horizontal position on the top of the timing

gearcase and driven by split gear on the pumpshaft.

Spencer Power Air Pump

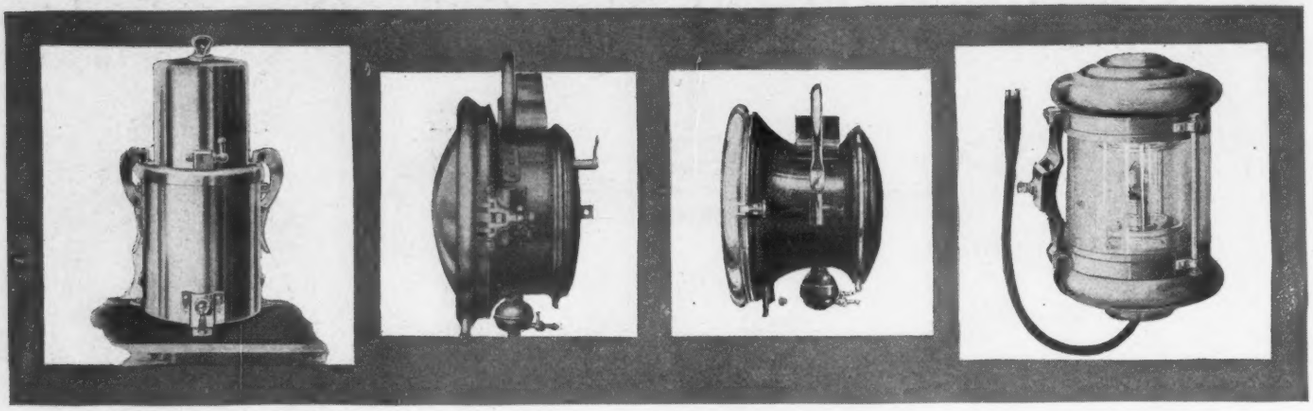
A pump designed to be operated from the crankshaft of the motor is manufactured by the Auto Pump Co. and is to be held against the starting-crank shaft, though this may not be applicable to all motors. It is equipped with a gauge on which the pressure is read and it is a two-cylinder opposed pump acting on the same principle as an opposed engine. It weighs but a few pounds and is to be carried in the tool box. A gear-driven air pump, designed to be permanently attached to the engine, is made by the same company and is of practically the same type. It is furnished as regular equipment on some of the higher priced cars.

A tire pump manufactured by the Artisan Brass Co., and which is designed to be permanently or temporarily attached to the engine, can be connected to either the water-pump shaft, main-engine shaft, camshaft or any revolving part of the power plant by the use of gears. It is equipped with a key seat and sliding gear on the shaft so that it can be put out of commission when not in use.



EISEMANN MAGNETO WITH CASE CUT AWAY TO SHOW GOVERNOR FOR CONTROLLING THE ADVANCE

EISEMANN TWO-SPARK MAGNETO, CONSISTING PRACTICALLY OF TWO MAGNETOS SIDE BY SIDE IN SIAMESE TWIN FORM



EDMUNDS & JONES GAS GENERATOR — THE NEW SOLARCLIPSE — A GREY & DAVIS DESIGN — THE HYRAY SIDE LIGHT

Lighting Facilities for Motor Cars Are Much Improved

As in the Case of 1910, Electricity Will Be an Important Factor, Although the Design Has Been Generally Improved Over That Offered for Consideration of Last Year's Buyers

AS is characteristic of all phases of the motor car industry at this time, much progress is shown in the design and construction of motor car lighting facilities for the season of 1911. The tendencies, however, are practically the same as those of 1910. There is a pronounced increase in the use of electricity; there are many improvements in design which render the principles of illumination employed more scientifically correct, and more harmony with the laws of optics is present.

There is much improvement in the arrangment of eclipsing devices; permanent and more accessible mountings in the combination oil and electric, oil and acetylene, and acetylene and electric lamps are more universally adopted; and the corners and angles in lamp designs are fast disappearing, so that cleaning and polishing is facilitated. Dark enamel and dull finished lamps, which are more modest in appearance, equally efficient and easier to keep clean, are being produced in greater quantities; may improvements are to be found in the design and arrangement of the brackets, sockets, and door latches; and the workmanship, finish and simplicity of assembly has been greatly refined.

The New Features

Among the absolutely new features, aside from the introduction and development of mechanical electric generators, in the way of lighting facilities brought out for the season of 1911 are: Special lamps for commercial car use, in which a dull finished steel replaces the brass construction of ordinary lamps; new styles of slim keystone-shaped pillar lamps for limousine cars, bullet-shaped head and side-lights, specially designed tail lights with means of illuminating the license number plates, and, also, tail lights with signaling devices by means of which a car following close behind may be warned of the intentions of the driver of the car in front to turn to the right or left or to stop. This latter device may be universally adopted as the motor car traffic becomes more congested, and as to its advantages in preventing accidents there is but little doubt.

Electricity Coming In

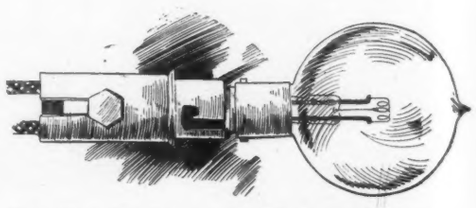
Whereas the use of acetylene gas as a headlight illuminant still reigns supreme in country driving and touring, it seems evident that the end of the coming season will see the use of electricity on a par with it even in lighting efficiency. Recent developments in the incandescent lamp field, the improvements which have been wrought in the construction of storage batteries and mechanical generators of current, together with the superior advantages of their operation and upkeep, to a great extent already have displaced the gas and oil lamps for the lighting of cars in the cities; and although electric lighting has long been considered more convenient and more reliable than acetylene gas, the larger consumption of electric current necessary to light the proper sized headlights has required the use of a large and heavy storage battery and frequent recharging of same, consequently electric lighting has made slow progress until the advent of the several improved mechanical current generating systems recently developed.

TWO OF THE NEW KEYSTONE-SHAPED PILLAR LAMPS BROUGHT OUT THIS YEAR BY THE VESTA COMPANY

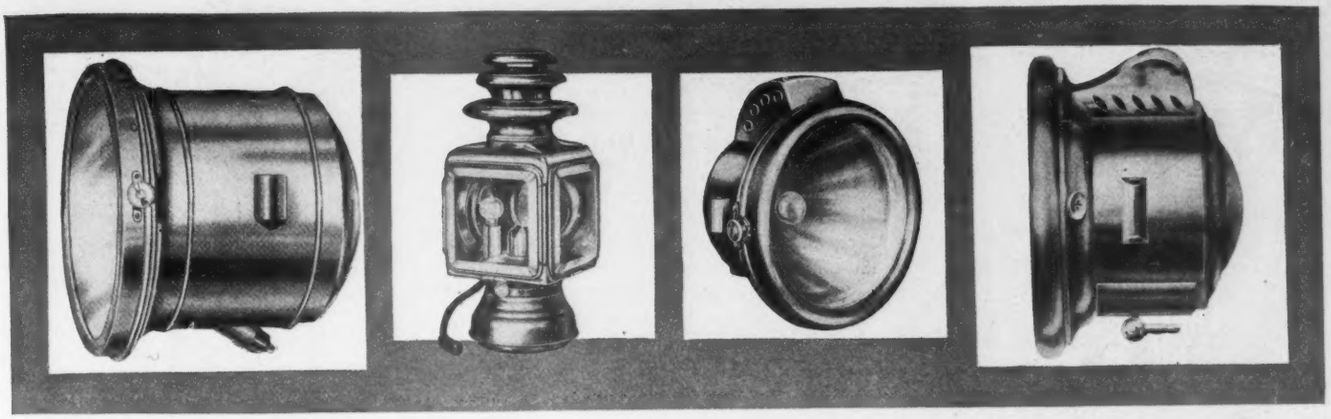
Of the three illuminants thus far found practical for motor car lamps, however, all have their advantages. The common kerosene oil burner is simple, economical, reliable, its fuel universally available, and it gives good service in many of the cheaper as well as the expensive constructions. The acetylene gas lamp gives a brilliant light of great power, it is capable of being readily maintained from a storage tank or generator, and durability as well as simplicity are features of the gas lighting system. The electric lamp gives a light which is more nearly ideal than any of the others and requires very much less attention.

Source of the Current

Electric lights may derive their current from the ignition battery, a separate storage battery, or a mechanical generator or dynamo; and all of these, which in previous years gave more or less trouble, are now developed. Electricity is recognized the world over as the most perfect form of illumination, and its application to motor cars has been retarded only by a lack of proper appliances which now can bardly be said to exist. The total absence of flicker and unsteadiness in the flame of the electric light lessens



THE NEW EDI-SWAN LAMP SOCKET USED IN K-W, SOLAR AND OTHER MAKES—THE LAMP AND SOCKET FORM A BAYONET JOINT



THE K-W PARABOLIC HEADLIGHT DIETZ OIL AND ELECTRIC THE DIETZ VICTOR ELECTRIC EDMUNDS & JONES GAS HEADLIGHT

Evolution of the System Produces Excellent Results

Mechanical Electric Generators Have Been Brought Out While Something New is a Lamp Designed for Use on Commercial Motor Cars in Which Dull Steel Replaces the Polished Brass

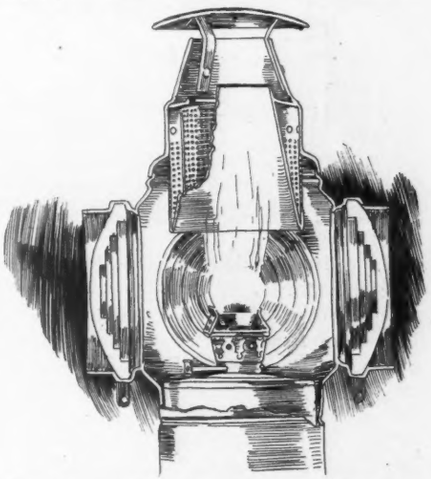
the strain on the eyes of the driver; the danger of fire is eliminated; there are no objectionable odors, cracked lenses, or sooty reflectors; and, above all, the convenience of merely touching a switch within easy reach of the driver for lighting or extinguishing the lamps adds immeasurably to the comfort of motoring at night.

Storage batteries are now specially designed for lighting purposes, and in the proportion to the rate of discharge, that is, they are designed to discharge more rapidly than was required for ignition purposes without injury to the plates, and are now installed with more regard for the capacity best fitted to the number and size of the lamps in the systems. This, in connection with the introduction of durable tantalum and tungsten lamp of high efficiency, with which a current consumption as low as 1 watt to the candlepower suffices, as against the 3½ watts consumption of the ordinary carbon filament lamp, has contributed much toward the success of electric lighting of motor cars.

Improvements in Oil Lamps

As an example of improvements to be found in oil lamps, and as an illustration of the principles used to promote their efficiency, a sectional drawing of the Adlake balanced draught lamp is shown. In this lamp the air currents are so directed that the glasses are always clear and dry, and should the flame smoke from being turned too high the smoke passes out at the top of the lamp and does not settle on the glasses; and the arrangement of the linings or internal features are such that the light cannot be blown out in ordinary use.

On the next page another improvement in oil lamp design is shown. The side lamps represented by this illustration, are equipped with inside oil pots, thus the oil



THE ADLAKE OIL LAMP MADE BY THE ADAMS & WESTLAKE COMPANY, SHOWING THE AIR-DRAUGHT PRINCIPLE OF ITS DESIGN

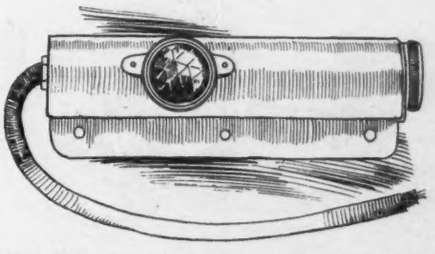
pots cannot be lost, and will not rattle because they do not depend upon the mechanical locking devices for holding them in position. They rest in a receptacle or well on the inside of the lamp base, which makes it impossible for oil to collect on the outside.

In addition to the oil lamps just described, the Adams & Westlake Co. also manufactures a comprehensive line of combination oil and electric side and tail lamps, electric combination tail lights and license number illuminators, electric headlights, disappearing inside limousine panel lamps such as are found on Pullman sleeping cars, and also three different sizes of dynamos and current regulator for use in connection therewith.

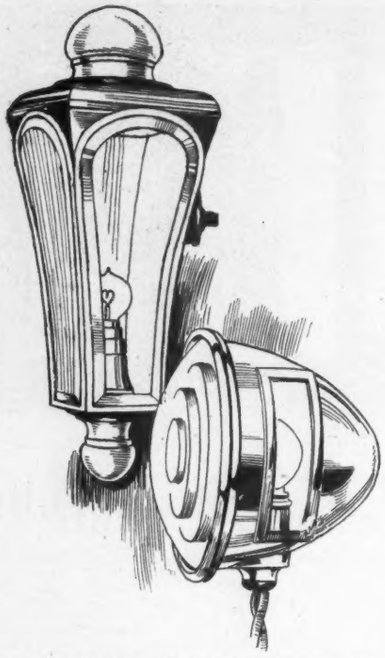
The Badger Brass Mfg. Co., maker of Solar lamps, exhibits a very complete line for use on motor cars and motorcycles. Among the latest improvements to be found in the Solar lamps are: The addition of the small type of Solarclipse, which makes this design adaptable to all sizes of cars; the adoption of the improved adjustable Edi-Swam base or lamp socket; a new line of motor truck lamps, designed for oil and acetylene, or oil and electricity combined, and the use of a gold reflector in the Solarclipse headlights instead of silver, for which a more penetrating but less dazzling reflection is claimed. Two sizes of electric headlights with parabola or bullet-shaped bodies, and side lamps of the same design, are also new features this year.

The Badger Brass Mfg. Co. has two lamps in which the dazzling beams of light are either intercepted or deflected to overcome the offensive glare, which has such a blinding effect upon the eyes of an approaching driver. These are the Solarclipse and the Ray-deflector. In the Solarclipse design the more powerful long-distance rays are eclipsed by means of a tin shutter on the end of a lever, which may be turned down behind the flame so as to entirely shut off the light from the powerful lens mirror at the back of the lamp.

THE NEW GRAY & DAVIS TAILLIGHT WITH A WINDOW IN ITS SIDE THROUGH WHICH LIGHT SHINES ON THE LICENSE NUMBER

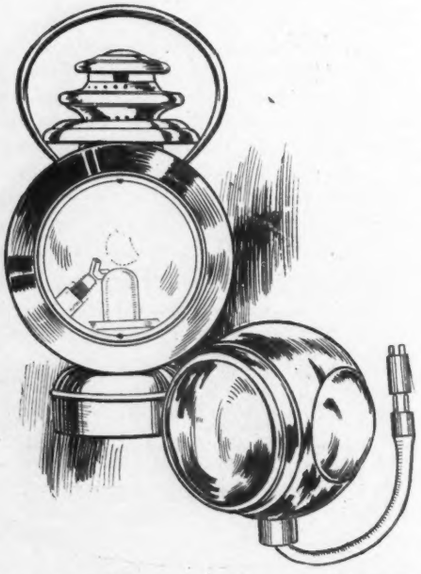


THE NEW ADLAKE TAILLIGHT WHICH HAS AN OPEN SLOT AT THE BOTTOM FOR THE PURPOSE OF ILLUMINATING THE LICENSE NUMBER



THE NEW GRAY & DAVIS ELECTRIC PILLAR LAMP FOR ENCLOSED CARS, AND THE NEW TAILLIGHT WITH THE WINDOW IN ITS SIDE

In the Ray-deflector, there is a means of raising the entire acetylene burner about an inch, and at the same time moving it forward out of the focal point of the mirror, so that the rays are deflected downward. The deflection or eclipsing of either of these lamp designs is operated at will from the driver's seat by means of Bowden wire connections. Black plated, black or bright nickel, or oxidized finishes are a feature of the Solar line. The patent leather finish is black, with a metallic lacquer-like lustre, it is impervious to heat and moisture, and more durable than the most perfectly finished motor car body; it requires no more care in washing to prevent being scratched and eliminates the constant work of keeping brass lamps bright which is a most important factor in the trade.

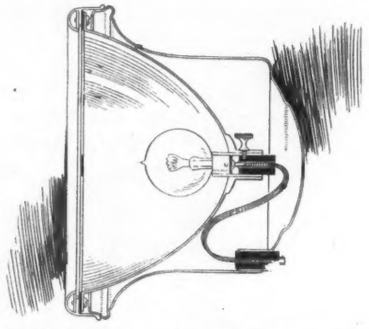


THE SOLAR COMBINATION OIL AND GAS LAMP ..FOR COMMERCIAL CARS, AND THE NEAT SPHERICAL DIETZ ELECTRIC TAILLIGHT

New Dietz Headlight

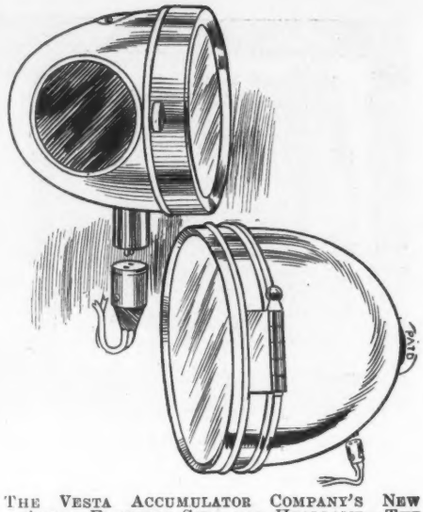
The R. E. Dietz Co. exhibits a complete line of motor car lamps, including a new close-coupled lens mirror headlight with an acetylene gas burner, a similar design designated the Victor with an electric lamp and paraboloid reflector, Excelsior side and tail lamps for electricity only, steel truck lamps, combined oil and electric side lamps, Dietz generators, and interchangeable burners for readily converting oil lamps into gas or electrics. The body of the new close-coupled headlight is made from one piece of eighteen-gauge brass, with a one-piece drawn top, which fits flush to the lamp itself, without rivets. These lamps are fitted with demountable mirrors and front door lenses, either of which can be replaced without returning the lamps to the factory. A feature this year of the Sterling combination oil and electric tail lamp is the equipment of a new rattle proof fount, which is guaranteed not to rattle or become loose and drop off.

In the acetylene, oil and electric lamps brought out this year by the Edmunds & Jones Mfg. Co. several commendable features of lamp design are to be found, and special attention is called to the interchangeability of the hood and reflector, which are removable after releasing two screws; to the new bullet type of electric body design; to a new improved generator; and to a new door fastener on one of the lamps which resembles the clasp of a purse and is of the utmost simplicity. The reflector of one of the electric lamps can be easily taken out without releasing the glass or removing any screws, and a very accessible adjustable lamp socket is mounted in this reflector, which is of paraboloid design. This reflector is also adaptable for converting the gas lamps into electrics.



A SECTION OF A SOLAR ELECTRIC LAMP, SHOWING THE PARABOLIC REFLECTOR AND THE ADJUSTABLE BULB-SOCKET FOR FOCUSING IT

The improved features of the new acetylene gas generator comprise a very effective and easily operated toggle fastener, a shaking basket instead of a rigidly attached one, and a base attachment for securing the generator to the running board of a car in a way that will permit of its being readily removed for the purpose of emptying the ashes or cleaning and polishing. This detail will appeal to many lamp enthusiasts.

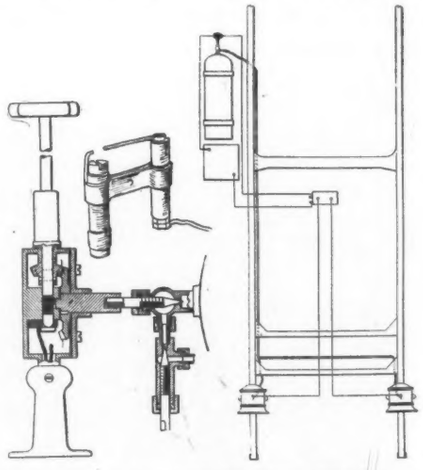


THE VESTA ACCUMULATOR COMPANY'S NEW ACORN ELECTRIC SIDE AND HEADLAMP—THE SIDELIGHT ABOVE AND HEADLIGHT BELOW

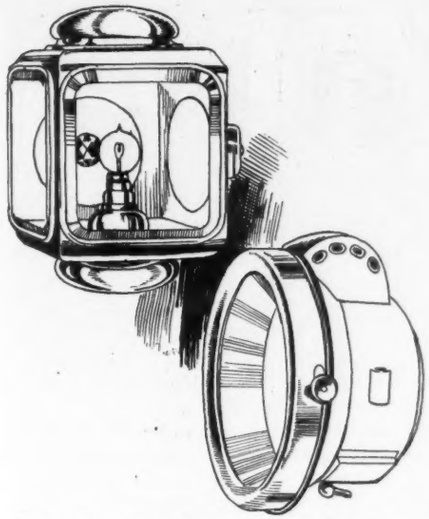
Driving Lamp for Doctors

Another new addition to the line for 1911 is a physician's driving lamp, which will be a side oil lamp, significant of a doctor's vehicle in view af the fact of the demand made upon them at all times of the night, which requires a lamp with a handle so that it can be used for finding numbers in the dark. This lamp is fitted with a white front glass, a green side glass, and with a red glass in the rear. A commercial truck lamp, and the E & J condensation cup, are also features of the line for 1911.

The Electric Storage Battery Co. is now showing a complete line of Hyray headlights, side lights, tail lights, search lights and marine lights, and electric fittings for gas and oil lamps. Complete lighting outfits for use in connection with their Exide batteries are a feature of this company's line. These outfits vary in lighting and battery capacity and are designated outfit A, B, C, D, E and F, according to the sizes of the lamps and battery. Outfit A includes two Hyray



THE ELLIOTT AUTO-LIGHTER—DETAILS OF TANK VALVE AT LEFT, SPARK POINTS ON GAS TIP IN CENTER, CHASSIS WIRING DIAGRAM

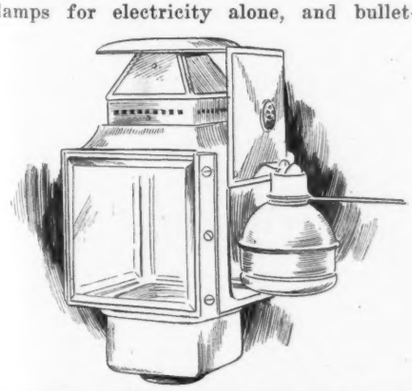


THE NEW SQUARE ELECTRIC SIDE LAMP, AND A CLOSE-COUPLED SHORT-FOCUS GAS LAMP, BOTH MADE BY GRAY & DAVIS

electric headlights, two Hyray electric side lights of the cylindrical type, one Hyray electric tail light, two 16-candlepower 6-volt tungsten lamps, two 4-candlepower 6-volt tungsten lamps for side lights, one 2-candlepower 6-volt tungsten lamp for the tail light, one three-circuit push button switch, 36 feet of No. 14 Duplex rubber-covered and braided flexible wire, and 10 feet of No. 14 rubber-covered braided flexible wire. With every battery of this capacity all the lamps on the outfit can be kept burning continuously for 9 hours per charge. Larger or smaller batteries, of course, can be furnished. Outfit B is practically the same, except that it has a continuously burning capacity of 19 hours per charge; and the other outfits vary slightly in different ways.

New Unit Dynamo System

In addition to its new unit dynamo system, the Gray & Davis Co.'s exhibit includes a number of new styles of motor car lamps. There is a close-coupled design for acetylene gas, a new electric headlight with an inside screw focusing attachment and silver reflectors machined to a template so that they are absolutely correct in shape, combination electric and oil lamps, small and neat square side lamps for electricity alone, and bullet-shaped electric side lamps to match the electric headlights previously mentioned, tubular oil tail lamps, a bullet-shaped electric tail lamp with a large red lens and a side glass which allows white light to shine on the license number, an entirely new design of pillar lamp for limousine and closed cars, electric attachments for converting acetylene lamps for electrical use, and two types of acetylene gas generators.



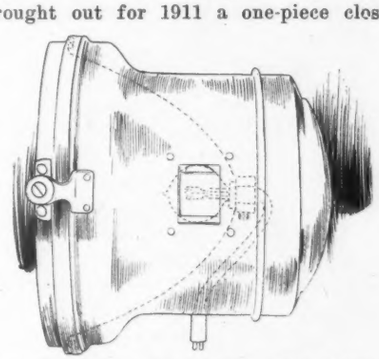
THE NEW ADLAKE AUTO SIDE LAMP FROM WHICH THE OIL POTS CANNOT BE LOST AND WHICH DOES NOT RATTLE OR LEAK

The new pillar lamps are electric only and are finished in all brass or brass and black enamel, or nickel and enamel. They are equipped with 6-volt 4-candlepower bulbs and cut-out plugs, and are made to fit on a round holder or bracket.

This firm's unit dynamo system comprises a constant speed generator, a governor and electric cut-out, and a battery to run the lights when the car is standing or running below the dynamo speed. An incandescent arc-light bulb is used, which is claimed consumes but 1 watt per candlepower and will give an exceptionally powerful light when used with a parabolic reflector.

One-Piece Closed Body Rushmore

The Rushmore Dynamo Works has brought out for 1911 a one-piece closed body lamp of simple design. The shell or body is not spun, but drawn from a single piece of metal without being annealed, which, it is claimed, gives it considerable more strength than were it necessary to anneal it. The side prop castings have bevel edges, rivet holes are countersunk and the corners are well fitted so that they can be readily cleaned. The lens is mounted in the body and secured by means of internal screws, having a drop of solder on the ends of the screws to prevent the vibration of the car from shaking the lens loose.



THE EDMUNDS & JONES MFG. CO.'S ELECTRIC HEADLAMP DESIGN WITH THE PARABOLIC REFLECTOR AND ADJUSTABLE BULB SOCKET

The front door glass and reflector are mounted in the door and are secured by internal screws with a special arrangement which prevents the door glass from moving around and the stripes from getting crosswise in the door. The attachment of the ventilator to the body of the lamp is improved in that all external screws and rivets are eliminated. The generator made by this company remains unchanged, but arrangements are made to equip both old and new models of

TWO NEW SOLAR ELECTRIC LAMP DESIGNS, THE LOWER LEFT FOR HEAD AND SIDE LAMPS, AND THE UPPER RIGHT A PILLAR LAMP

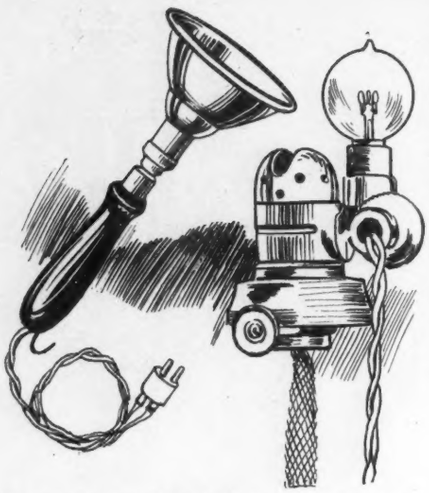
acetylene gas lamps with a metal reflector and electric bulb for converting them into combination electric and acetylene lamps. The new line of one-piece body lamps are made in four sizes having 6, 7, 8 and 9-inch mirrors, all of which are of the well-known short focus design.

The C. T. Ham Exhibit

The feature of the C. T. Ham exhibit of motor car lamps this year is a signaling tail light, a line of new steel truck lamps for kerosene or electric bulbs, and a very complete line of Packard lamps. The Packard Mazda motor car lamps supplied by this company constitute a feature of the line this year and may be obtained in all sizes and capacities adaptable to motor car use.

The K-W Ignition Co. has brought out a complete line of electric motor car lamps this year for use in connection with the K-W magneto generator. Complete electric lighting systems are furnished by

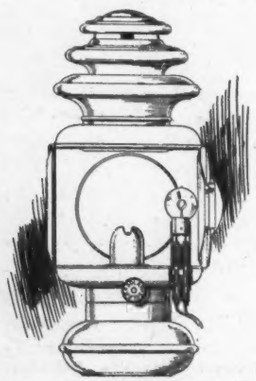
A COMBINATION OIL AND ELECTRIC PILLAR LAMP AND A SQUARE TYPE OF ELECTRIC SIDE LIGHT MADE BY THE BADGER BRASS MFG. CO.



K-W Ignition Co.'s Portable Electric Lamp and a Fitting for Converting Oil Lamps Into Combination Oil and Electric

this company, as well as special fittings for converting oil or gas lamps into electrics. In the K-W equipment the new Edi-Swan lamp sockets are employed; there is a new parabolic head lamp made with a flared front and solidly constructed of extra heavy brass; and parabolic reflectors are used. Other features of the equipment include electric side lamps, speedometer lamps, double-bulb electric tail lamps, with one bulb for use with the K-W magneto when the engine is running and the other for the battery when the car is standing idle; an electric convertor or parabolic reflector which can be readily mounted in almost any design of gas lamp, portable trouble lamps, bracket lights for inclosed cars, search lights, marine lights, and fittings for providing oil lamps with electric bulb sockets.

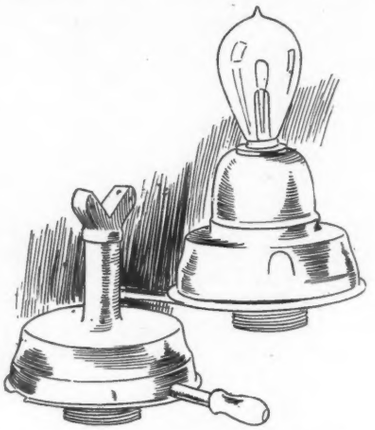
In addition to a most complete line of motor car lighting equipment, the Vesta Accumulator Co. is showing its new Vesta magneto generator, which is designed to charge and keep fully charged a storage battery for the motor car electric lighting system. It is driven direct from the engine and as the greatest need in a device of this kind is a means of equalizing the variations in speed, the most important feature of this magneto is the governor. This consists chiefly of two weighted arms acted upon by centrifugal force, and, in connection with a loose pulley on the shaft, actuates in turn a contact of the rheostat. The field is of the permanent horseshoe magneto type, and the armature are of the ordinary revolving design.



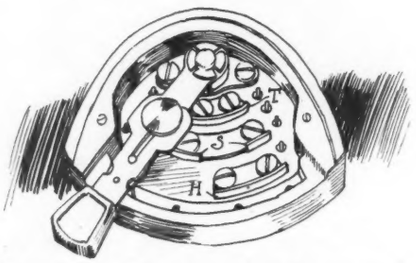
A Combination Oil and Electric Lamp Made by The Badger Brass Mfg. Co.

Lamps All Focusable

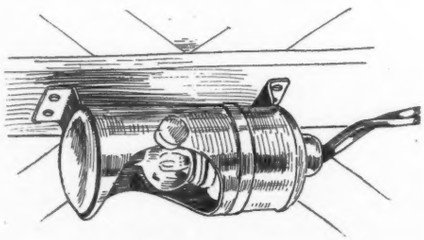
All the lamps made by this company are focusable, and the line includes barrel, flare and acorn or bullet types, of ordinary electric lights a special headlight for electric vehicles, parabolic reflectors with adjustable focusing sockets, cylindrical, square and acorn-shaped side lights, various designs of pillar lamps, combination oil and electrics, various types of tail lights, dome lights, speedometer and gauge lamps, canopy lamps of special design for folding tops, trouble lamps, hand search lamps, large revolving search lights, pocket electric lamps, and a most complete line of switches, connectors, bulbs and wiring material. Complete lighting outfits for motor cars are a feature of the Vesta line.



Dietz Fittings for Converting Oil Lamps Into Gas or Electrics

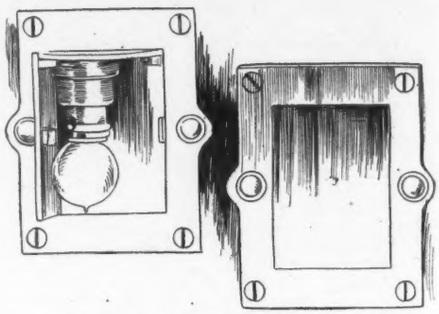


Gray & Davis Selective Type Switch with Detachable Handle—T, Taillight Contact; S, Sidelights; H, Headlamps



Vesta Dome Lamp for Canopy Tops with Shutter to Protect Bulb

The Edison Storage Battery Co. is now putting out a set of smaller cells adapted particularly to small lighting outfits such as are used in motor cars. As in the vehicle battery, the structural material used throughout is steel, affording the greatest possible rigidity and strength with a minimum of weight. Every set of Edison battery is guaranteed for a period of 5 years.

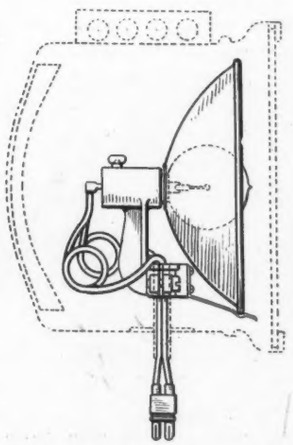


Adlake Disappearing Panel Lamp

The Witherbee Line

. The Witherbee Igniter Co. has developed a line of lighting specialties which enable one to convert one's oil and gas lamps by the use of electricity at small cost or substitute an entirely new electrical equipment. It is claimed that every Witherbee battery is rated for illumination and therefore the size of the battery desired can be absolutely determined by computing the wattage of the incandescent lamps to be used, taking into consideration the length of service desired before the battery is to be recharged.

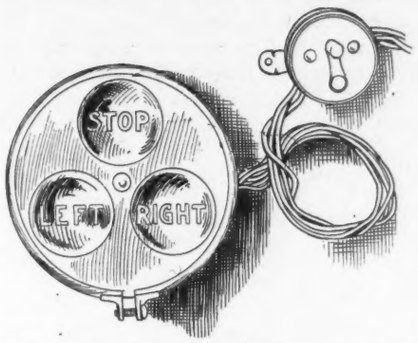
The Witherbee Igniter Co. makes fifteen types of storage batteries for lighting and ignition purposes. The Witherbee special lighting battery is designed for those who desire to use electricity for headlights as well as for side and tail lights. Its capacity is 100 ampere hours 6 volts and its dimensions are $7\frac{3}{16}$ inches wide, $12\frac{11}{16}$ inches long, $7\frac{1}{8}$ inches high and weighs 45 pounds. The elements are contained in a substantial vulcanite jar, reinforced by the Witherbee protection sleeve. For lighting side and tail lamps and for ignition as a magneto auxiliary the Witherbee 60-70 6-volt battery is said to give entire satisfaction, and when the service is for light only a battery of even smaller capacity will suffice.



The K-W Electric Converter and Parabolic Reflector for Gas Lamp.

Bumpers as Protectors of Motor Car Lamps a Good Feature

Two Divisions, One of Which Absorbs Shock by Means of Coil Springs While Rubber Rail Is Used on the Other — Many Details Perfected

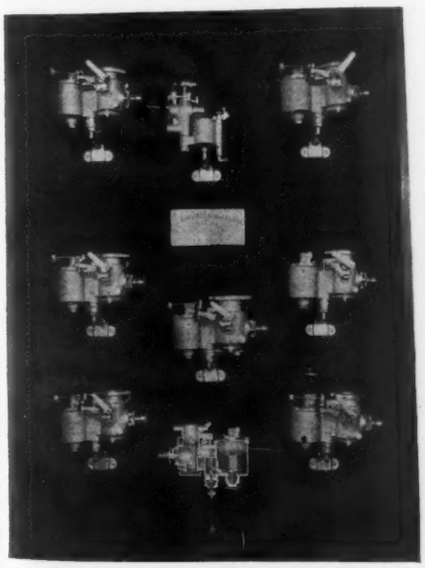


THE SIGNALLING TAILLAMP OUTFIT OF THE DOLLY ELECTRIC SPECIALTY CO.

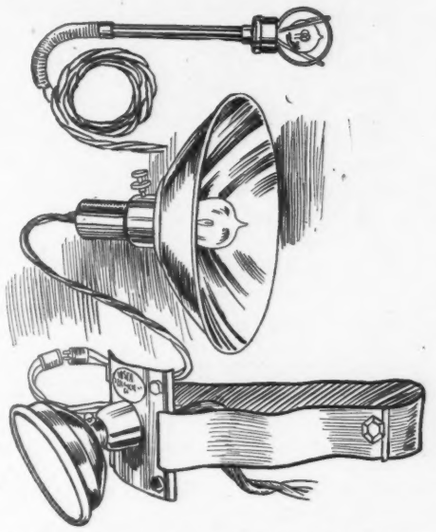
THE increased number of lamp bumpers for this season shows the large safety value of these devices, in the protection of headlights. Lamp bumpers are of two grand divisions, namely, those in which the shock is absorbed by coil springs in the supporting arms, and those in which the shock is absorbed by what might be designated a resilient bumper rail made of rubber tube resembling a pneumatic tire, with a thick rubber wall and small air space.

Lamp bumpers generally are fastened to the frame by the front eyebolt; that is, the bolt which anchors the front end of the forward spring to the frame. This forms but one anchorage point and there must be another. The second anchorage is frequently by a clamp which fits around the frame member. There are some bumpers in which the clamp is not used, but a hole is drilled through the side member of the frame instead. The main idea, however, is to avoid the drilling of holes in frame, and it points to the almost certain adoption of that bumper which attaches by the eyebolt and clamp.

There are several, designated swivel action bumpers, in which the bumper rail



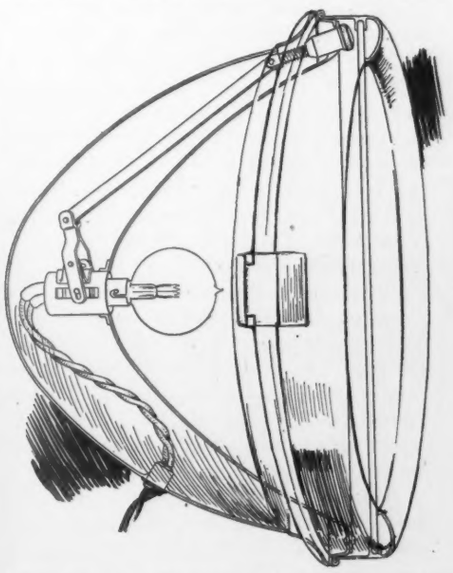
AN EXHIBIT IN THE ARMORY OF THE RAYFIELD CARBURETER



VESTA'S TROUBLE LAMP, PARABOLIC REFLECTOR WITH ADJUSTABLE SOCKET AND MINER'S LAMP THAT REPAIRMEN MIGHT USE

is hinged, so to speak, to the supporting arm. This allows a sidewise swing of the bumper rail, which is useful in case of one end of the rail striking an obstacle carrying it to the side.

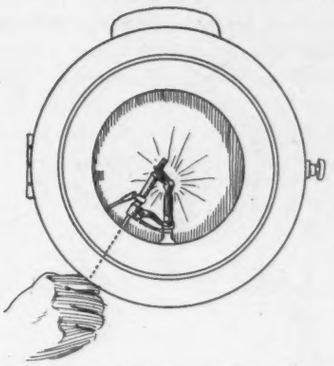
A new type of bumper is coming into vogue, namely that in which the bumper rail has a hinge and lock in it, allowing



THE IMPROVED FACILITIES FOR ADJUSTING THE FOCUS OF THE NEW GRAY & DAVIS ELECTRIC LAMP AFTER SIMPLY OPENING THE DOOR

of it being swung up or down so as to give room to crank the car.

It is customary in the majority of lamp bumpers to use a triple tube bumper rail, consisting generally of a main steel tubing with a brass tubing outside of it, and



THE KOEHLER HEADLIGHT IGNITER FOR IGNITING GAS FROM OUTSIDE OF LAMP

a reinforcing steel tube inside. This triple-tube arrangement adds strength where needed.

The Welton Fender

The Welton lamp bumper is distinguish from other lamp bumpers in that the shock-absorbing medium is not a spring arrangement but a hollow rubber tube, supported on a metal framework. The tube is bowed forward at its center. This tube has an external diameter of 2½ inches with a 1½-inch hole through the center. This bumper clamps to the frame so that it is not necessary to remove the eyebolt through the front end of the spring, or to drill the frame.

The Troy lamp bumper is an adjustable spring type and has three positions, namely, service, raised and lowered. The service position is that in which it is carried straight out in front; in the raised and lowered positions it is swung up or down in order to make cranking easier. This bumper attaches to the car frame by the front eyebolts of the springs. The bumper

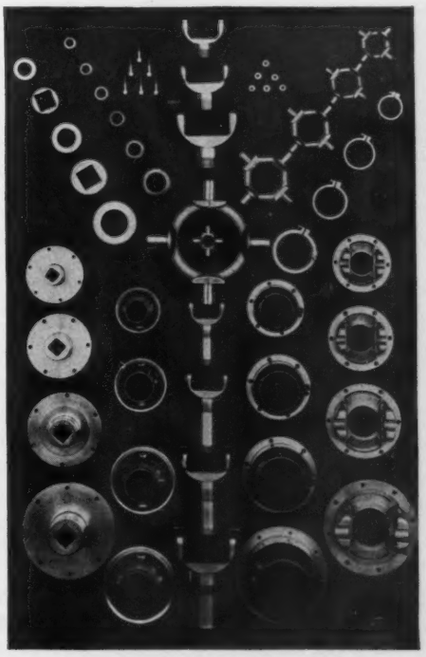
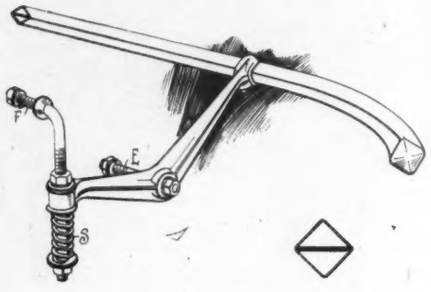


EXHIBIT OF PARTS USED IN VARIOUS SIZES OF SPICER UNIVERSAL JOINTS

rail is a steel tubing reinforced throughout its length with a second steel tube. The outer tube is covered with a third tube of brass not plated. All other parts of the bumper are manganese bronze. The shock-absorbing feature is springs carried in



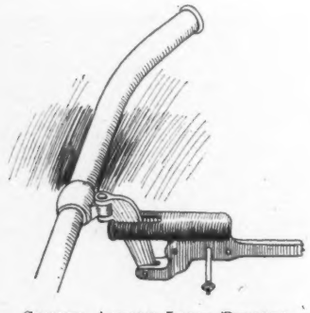
SAGER DIAMOND LAMP BUMPER

the brass supporting tube. The bumper has a hinged construction where it anchors to the frame in order to swing up and down. This hinge consists of a rotary plate, which has projections to engage with the arms supporting. To raise or lower the bumper it is only necessary to pull the rail forward and move up or down. The springs automatically lock it in the horizontal or service position.

Universal Lamp Bumper

The Universal lamp bumper is of the spring type, the springs being enclosed in the horizontal supporting arms which are hollow tubes. The bumper attaches to the frame through the eyebolt and by two clamps over the front end of the frame. This allows of attachment without drilling additional holes in the frame.

The Hercules bumper is intended for medium-priced cars and is attached to the frame hanger eyebolt and also by one other bolt through the frame.



SWIVEL ACTION LAMP BUMPER

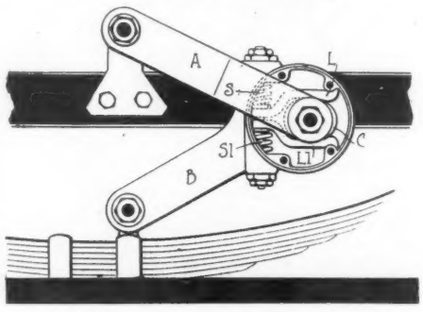
The Semi-Automatic bumper clamps to the frame, thereby eliminating the necessity of drilling holes. It can be secured to either semi or elliptic springs. By means of a perforated continuation of the supporting arms and a perforated vertical support which clamps to the frame the bumper can be tilted up or down to meet all requirements.

The E-Z Angle bumper, built by the same concern as the Perfecto, is identical excepting in that the cylinder portion of the supporting arm is hinged to the bracket which attaches to the frame, so that in case of a jar the bumper rail is swung upwards.

Sager Diamond Bumper

In addition to the Sager protection bumper, used last year, there is for this season the Sager Diamond bumper, which takes its name from the fact that the bumper rail in front is diamond-shaped, being made of brass tubing 1¼ inches to the side and reinforced by a diagonal strip of steel through the center. The supporting arms are manganese bronze of diamond cross section. Each arm is supported midway of its length by a bolt passing through the front eye of the spring. The rear end of the arm is supported on a vertical bolt which curves at its upper end through the frame. The coil spring surrounding this bolt beneath the supporting arm serves to absorb the jar when the breaker bar is forced upwards in case of an accident.

The Polson Universal bumper is a spring type which attaches to the frame at the eyebolt and by a clamp. The bumper rail is steel tubing covered with a brass tube. The attachments to the



PEERLESS SHOCK ABSORBER

frame are such that the bumper can be put on any car without drilling holes.

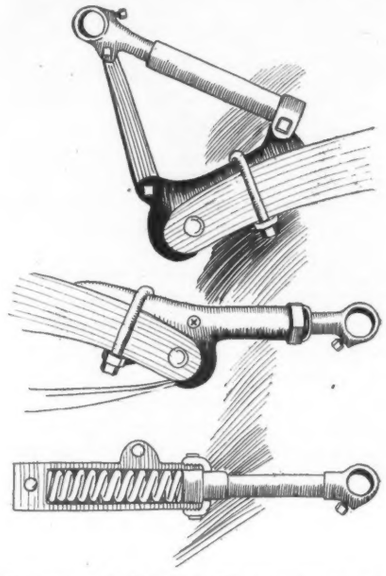
The Eagle swivel-action bumper is the same as in 1910. It is of the spring type and attaches to the frame without drilling any holes therein, utilizing, as it does, the eyebolt at the front end. The absorbing medium in each arm is a 6-inch coil spring enclosed in a cylinder. This spring is built for 1,500-pound pressure.

Cox Perfecto Bumper

In this bumper the supporting arm is a cylinder attached to the frame at two points, one point being the eyebolt and the other by a clamp fitting around the frame. The bumper attaches to a piston carried within the cylinder. Within is a stiff spiral spring which absorbs the jar.

Up or Down Bumper

The Up or Down bumper takes its name from the fact that it can be swung upwards or downwards from its horizontal position, in order to allow of cranking the motor more easily. Its bumper rail is a triple tube, composed of a steel tubing reinforced by an inner steel tube and covered with a brass tubing. The supporting arms are manganese bronze and consist of a piston and cylinder. The piston



E-Z ANGLE AND PERFECTO BUMPER ATTACHMENT AND SPRING INSIDE SUPPORTING ARM

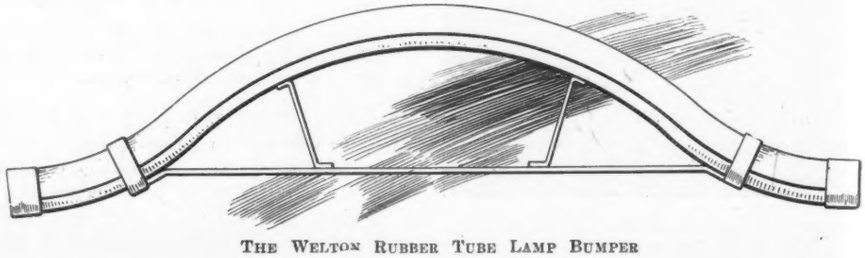
is in two parts connected by a hinge. To swing up or down it is only necessary to pull the piston out to the hinge, which immediately allows of the desired swing. The shock-absorbing medium in this bumper is an enclosed coil spring.

The Up and Down bumper is made with a double rail for use on large cars. In this bumper the supporting rails are heavier than in the single rail type.

The Swivel Action bumper gets its name from the fact that the bumper rail is swiveled to the supporting arms, so that one end of it can be forced back without necessarily carrying the other end back with it, or imposing any strain on the mechanism. The bumper rail is a seamless steel tubing $1\frac{5}{16}$-inch in diameter, and made of ⅛-inch stock. It is copper and brass plated. This bumper rail is carried on short pivoted levers hinged at their lower ends on the supporting arms, which branches, the upper branch carrying the coil spring which absorbs the jar.

Harroun Spring Bumper

The Harroun lamp bumper, one of the pioneers in this line, is of the spring absorbing type, there being an exposed coil



THE WELTON RUBBER TUBE LAMP BUMPER

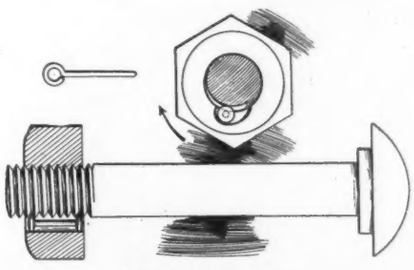
spring surrounding each supporting arm. This coil spring rests at its inner against the supporting bracket and at its outer end against a boss on the supporting arm.

WILLIAMS' RATCHET WRENCH

These bumpers are attached by removing the spring eye bolt and the bracket which attaches to the front spring.

Absolute Lock Nut

The Absolute lock nut differs from many others in its principle. A slot is cut in one side of the nut into which is placed a locking pin with a flange on each end. The slot is deep at one edge, but gradually tapers to the other. When the nut is being turned on a locking pin travels in the deep portion of the slot, and so offers no resistance to the nut. As soon, however, as an attempt is made to remove the nut, the



ABSOLUTE LOCKNUT

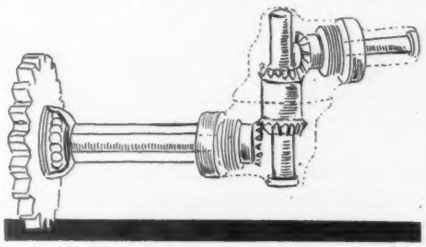
locking pin is forced into the narrow end of the slot and wedges firmly between the nut and the bolt, thereby irremovably locking the nut. In order to remove the nut it is necessary with the aid of an unlocking key to remove the locking pin, after which the nut can be readily removed.

Columbia Lock Nut

The Columbia lock nuts are made in two types. One illustrated herewith consists of an inner and outer part, both of which are threaded and screw on to the bolt. The inner part is threaded on first. It has a tapered receptacle into which the coned outer part fits. This coned outer part is split along one side, so that as it is screwed into place against the inner nut, the split is gradually closed up. It is the nut in place that does the locking.

The Peerless Shock Absorber

The Peerless shock absorber is a combination cam and spring type, the friction principle not entering into its makeup. The lower arm of the absorber carries a cup-shaped hub within which is a cam carried on the other arm. This cam works between two levers which are pivoted at one end and held together by coil springs



NEW SWIVEL JOINT USED FOR 1911 TRADE ON JONES SPEEDOMETERS

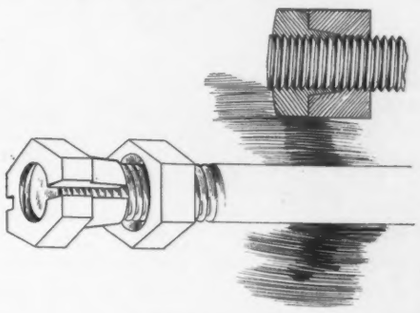
at the opposite end. In case of a sudden drop or recoil the cam acts, separating the arms and compressing the springs. This shock absorber allows of a free, unrestricted movement of the spring through a vertical range of 1¼ to 1½ inch. The same framework is used in the three sizes built, namely for light cars up to 1,000 pounds; medium ones weighing as high as 2,200, and heavy cars weighing 4,500. The only difference is in the strength of the springs.

Williams Ratchet Wrench

The Williams ratchet wrench is an improvement on the straight type wrench, in that it is not necessary to remove the wrench entirely from the nut in order to get a new hold. The ratchet arrangement is obtained by making one arm of the jaw shorter than the other, in fact, it is just short enough to catch the nut at one corner, namely, 2 in the illustration. But this is enough, as practically any wrench exerts its pressure on the nuts at two points, 1 and 2, as illustrated. Having the short jaw rounded allows of the ready ratchet action.

Jones Speedometers

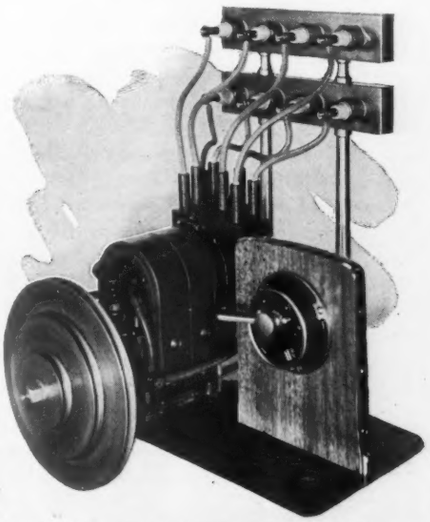
Jones speedometers remain the same in principle as heretofore, but have been improved in the use of a ne wswivel joint used on the short shaft carrying the sprocket which is driven from the road wheels. This swivel joint consists of four bevel gears, one on the end of the sprocketshaft, one on the end of the flexible tube, and the other two on a vertical shaft at right angles to these. The use of this swivel takes the bending strain off the flexible shaft. A new flexible shaft also is being used on all instruments used on commercial vehicles and an option of fitting it on pleasure cars is given. It is made up of alternate hook links and cylindrical-shaped stamped links, the stamped link being of sufficient diameter to revolve smoothly inside of the shaft



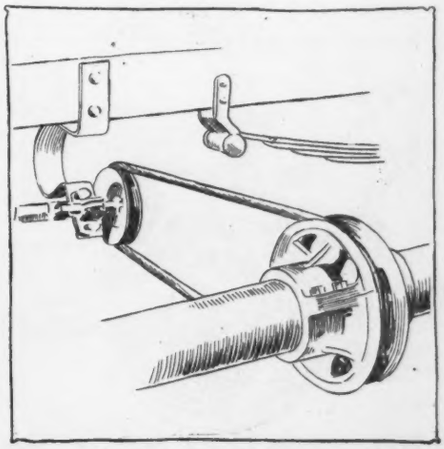
COLUMBIA LOCKNUT

housing but not to leave any room for side sway or slapping. The old flexible shaft is continued and consists of a solid steel core around which are wound in opposite directions four layers of cable made up of three strands each.

For concerns preferring to drive the speedometer from the shaft in the vehicle the company has brought out an adjustable pulley which can be adjusted to the correct diameter of the shaft and clamped thereto. A driven pulley connecting with the flexible shaft is attached to the frame. A belt transmits from the propellershaft pulley to the other one.



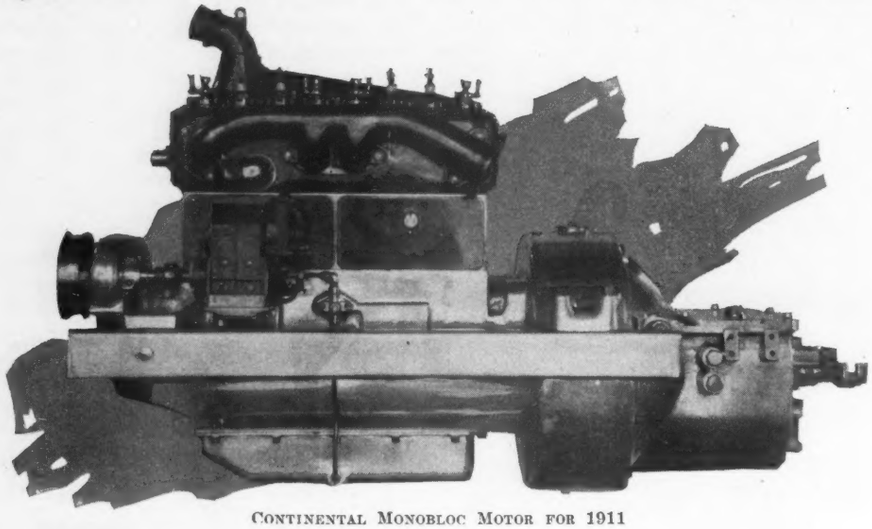
BOSCH TWO-SPARK MAGNETO WITH DOUBLE DISTRIBUTOR AND DOUBLE PLUGS



ARRANGEMENT FOR DRIVING JONES SPEEDOMETER BY BELT FROM PROPELLER SHAFT

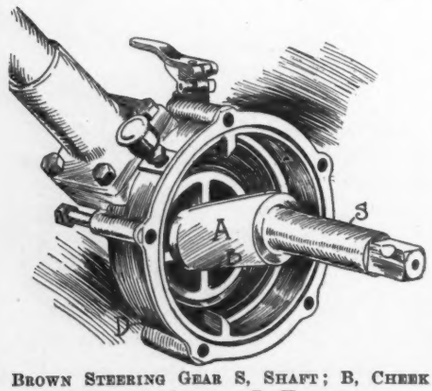
Accessory Miscellany

Steering Gears Have Been Improved---The Gear Has Taken the Place of the Sector---Steering Mechanisms for Trucks are Featured---Gear Formed Integrally with Shaft Is Coming



CONTINENTAL MONOBLOC MOTOR FOR 1911

THE Ross tubular steering gear, made for 3 and 5-ton trucks, differs from others in that it does not use a gear or sector, but a combination of screw with sleeves having internal and external threads. To the bottom of the steering column is brazed a steel screw, which meshes with the internal thread on a phosphor bronze sleeve. This sleeve has an external thread meshing with an internal thread on the housing of the steering gear. The phosphor bronze sleeve is of considerable length and while its upper half engages with the steel screw of the steering column, its lower half has a number of straight internal keyways, which engage with corresponding keyways on the radius arm, which radius arm extends half way up into the steering gear. When the steering wheel is turned the phosphor bronze sleeve not only is raised and lowered, but is carried around in a rotary manner as well. With it is carried the radius arm, thereby giving the required turn movement.



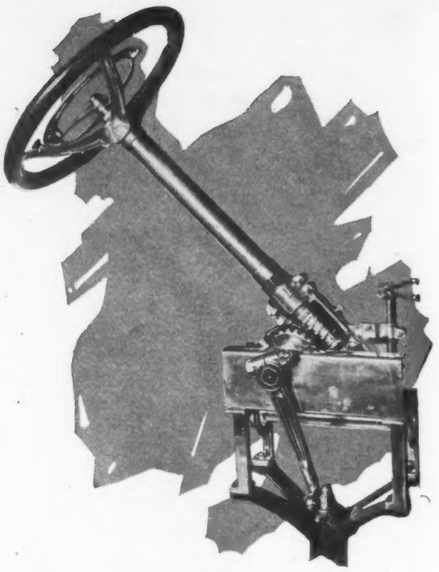
BROWN STEERING GEAR S, SHAFT; B, CHEEK PIECES; A, OFFSET; D, HOUSING

Warner Gear Unchanged

The Warner Mfg. Co.'s steering gear has not been changed for this season. It is made in the worm-and-gear style only. The shaft and gear are formed integrally and are carried on eccentric bushings for adjustment sake. Ball thrust bearings are placed above and below the worm. The worm is keyed to the steering column. All of the steering wheels are so mounted that the column can be adjusted at any angle.

Gemmer Steering Gears

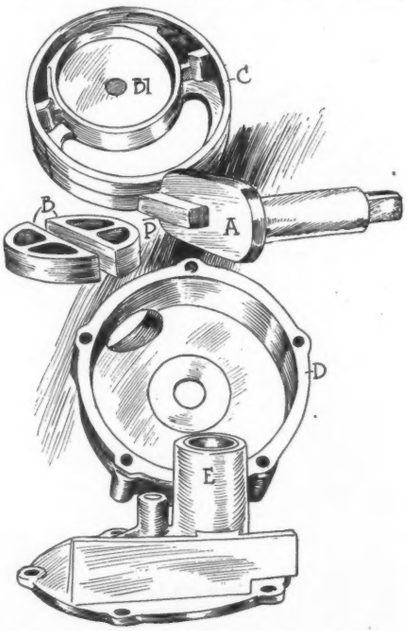
The Gemmer steering gear is made in two types, namely the worm-and-gear style, and the original worm-and-double-nut with a rocker-arm combination. In the worm-and-gear steering gear a change has been made in that the gear with its shaft is forged in one piece instead of being separate, as heretofore. The worm is one-piece with the shaft, and the shaft is electrically welded to the steering column tube instead of being brazed thereto. There is one new Gemmer model for this year, namely, model O, of the worm-and-gear type, intended for cars weighing up to 2,700 pounds and selling around $1,500. It is of the plain bearing design with ball thrusts. As in the other types the gear and shaft are one piece. The Gemmer line for this year also includes a line of steering gears for trucks, which are made both in the worm-and-gear, as well as the old Gemmer style.



GEMMER STEERING GEAR

The Lavigne Steering Gear

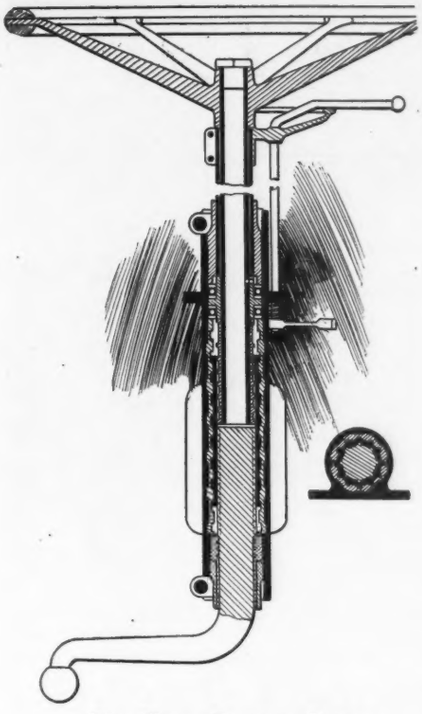
The Lavigne steering gear differs from the ordinary in that it has what might be called a double worm, which meshes with two sliding blocks placed at diametrically opposite sides of it. When the steering wheel is turned one block is raised and the other is lowered. These sliding blocks bear upon rollers on the opposite end of a rocker arm, which rocker arm is supported on cross shaft to which the radius or ball arm attaches.



ASSEMBLY BROWN STEERING GEAR C, ECCENTRIC; B, CHEEK PIECES THAT REST IN B1; P, PROJECTION THAT FITS BETWEEN CHEEK PIECES B

Driggs Steering Gear

The Driggs-Seabury steering gear is of

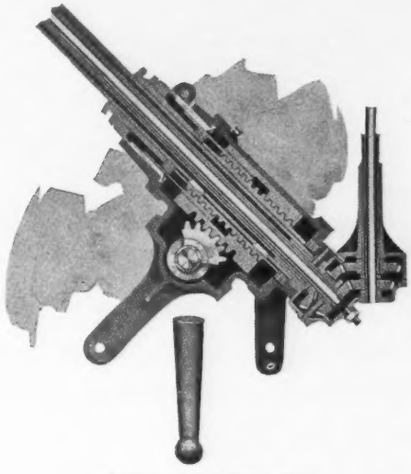


ROSS TRUCK STEERING GEAR

the worm-nut-and-sector type. The worm is attached to the steering tube. It meshes with a nut made in two parts, an upper and lower, the lower half carrying a rack which engages with the sector. The up or down movement of the nut, when the steering wheel turns the worm, carries the rack up or down, thereby turning the sector.

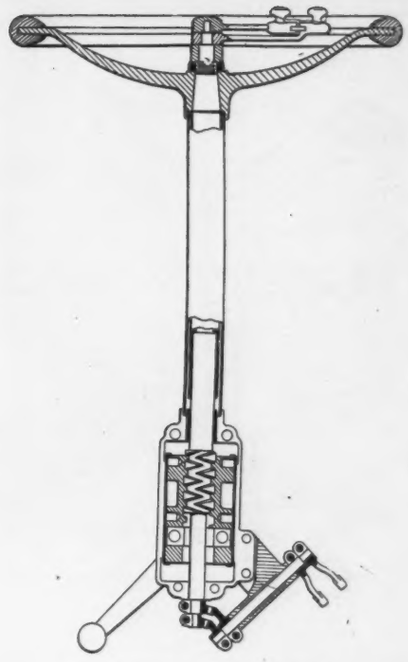
The Warner Gear Co.'s steering gear is built for pleasure cars, taxicabs, commercial vehicles and trucks. The gears for these different classes are of the worm-and-gear type, using the complete gear in preference to the sector. The end of the gearshaft is squared to take the radius of ball arm. Ball thrusts are placed above and below the worm. In the heavy truck and touring car type a bearing is provided each side of the gear, but in the type for lighter touring cars but one long bearing is used to carry the gearshaft.

In the Brown steering gear the operating parts are worked through an eccentric arrangement. On the lower end of the steering column is a bevel gear, which causes the rotation of an eccentric disk.

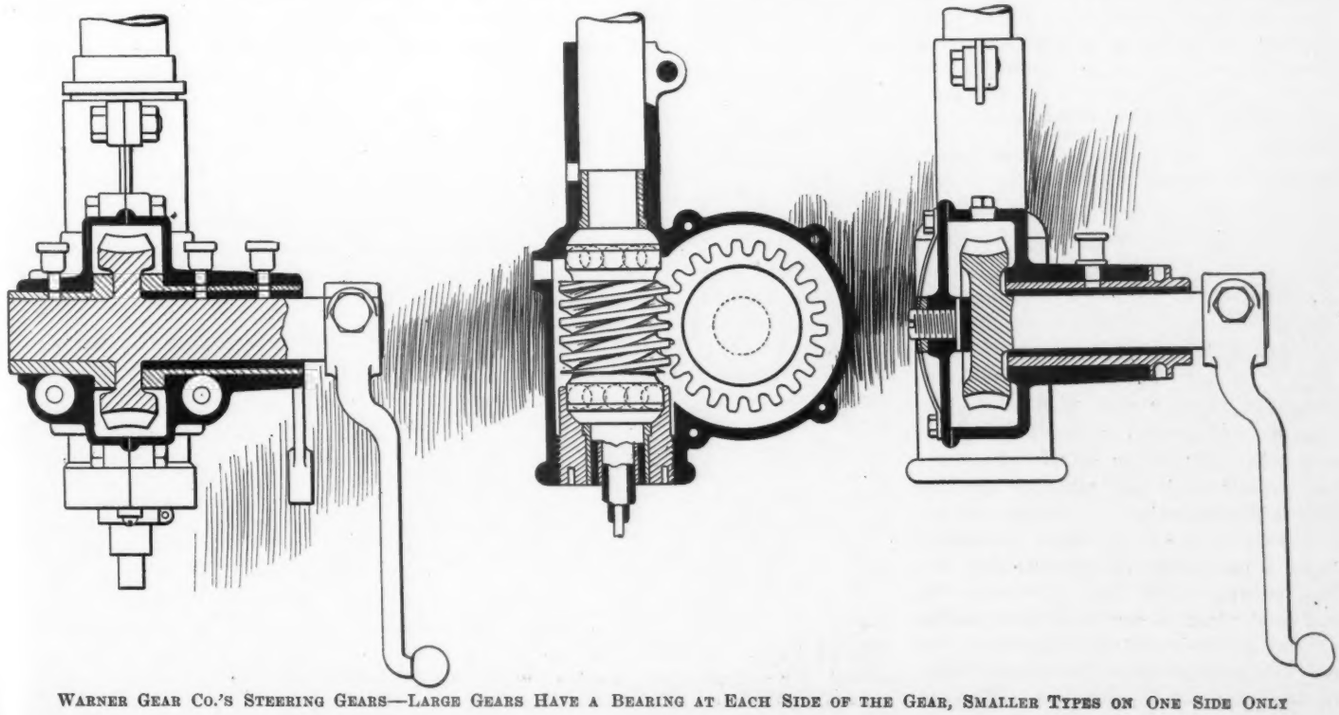


DRIGGS STEERING GEAR

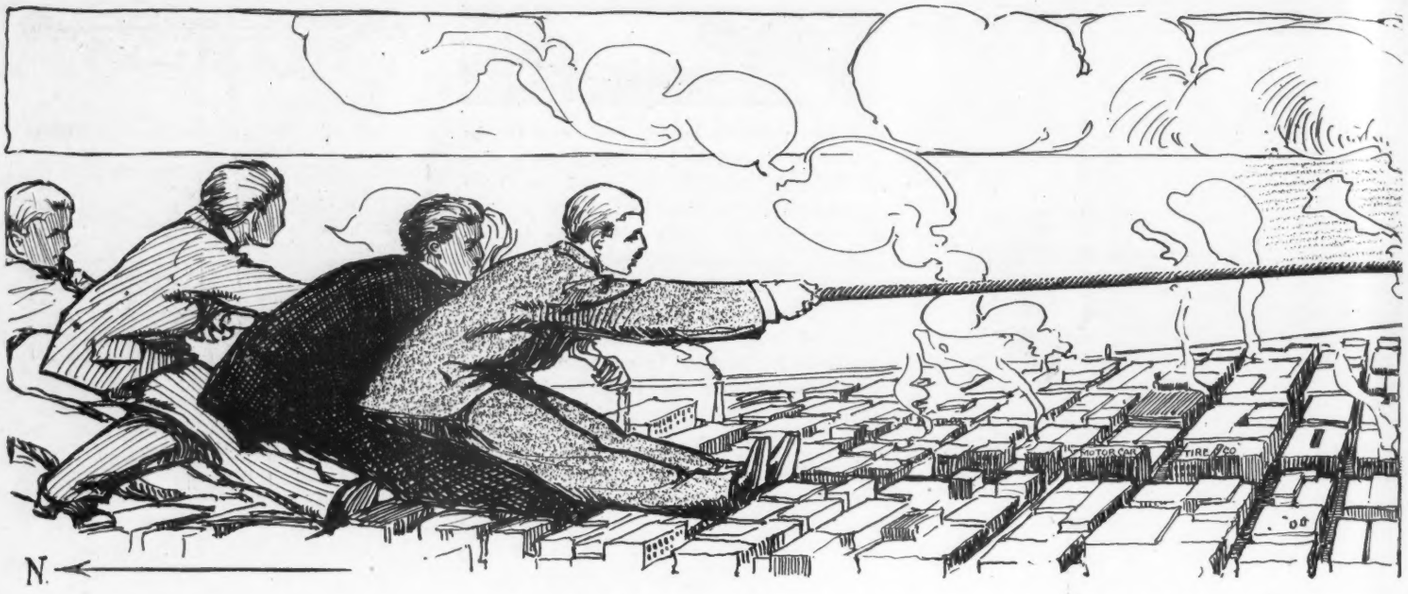
This eccentric disk carries within a circular cup, in which are two semi-circular blocks, between which is an arm carried on the shaft of the radius arm. Turning the steering wheel right or left the eccentric piece revolves, carrying the cheek pieces around with it. These cheek pieces are in turn contacting with and operating the projection on the radius armshaft. Using the eccentric arrangement, irreversibility is secured in that the nearer the cheek pieces are to the center the greater the locking effect. In this gear the thrusts are taken on broad curved faces rather than along straight lines, as is the case with worm and gears, or worm and sectors. The general scheme of this steering gear, as well as all of its parts, is illustrated on the opposite page. The carrying of the cheek pieces B within the circle B1 of the eccentric C is shown.



LAVIGNE STEERING GEAR



WARNER GEAR CO.'S STEERING GEARS—LARGE GEARS HAVE A BEARING AT EACH SIDE OF THE GEAR, SMALLER TYPES ON ONE SIDE ONLY



ESTABLISHING OF SOUTHERN COLONY ON CHICAGO'S ROW HAS RESULTED IN INTERESTING

Figures And Facts That Prove Chicago

With 118 Different Makes of Cars Represented Either by Branches or Agencies, no Doubt Exists as to the Supremacy of Windy City as the Distributing Center of the Country

IT is fitting that the national show should be held in Chicago, for without a doubt Chicago is the hub of the motoring universe in the distribution of the products of the industry. Detroit has it beaten in every respect as a manufacturing center of course, while New York's claims to supremacy lie in the volume of business done, but, it is unquestioned that more cars are sold through Chicago agencies and branches than from any other one city in the country. It is quite a task to get a correct census of the different makes of cars handled in cities like Chicago and New York because in each there are small concerns in the outlying districts which seldom are heard of along the row. It is only at show time that the round-up takes place and an effort is made to estimate the motor strength of a metropolis.

Changes on Chicago's Row

Such a round-up this year shows clearly how Chicago has outstripped its great rival on the Atlantic coast. No less an authority than Alfred Reeves, general manager of the Association of Licensed Automobile Manufacturers, places New York's strength as eighty-four different makes of pleasure cars whereas in Chicago a careful count discloses 118 different makes of pleasure cars in the motor mart, while there are probably at least fifty different makes of commercial machines sold in the Windy city. This shows quite a percentage of increase over the final report of 1909, when there were 101 makes of pleasure cars and thirty makes of commercial machines handled in the big city which houses the national show. Going still further back and taking in 1908, it is discovered that in that year there were but eighty-one different makes of pleasure cars and only a mere handful of commercial vehicles.

While all this of course is pleasing news to the Chicago tradesman, yet the most interesting phase of the situation at the present time is the wondrous change that has taken place in Chicago's row since the last show. In that brief space of time there has been established a substantial southern colony so to speak, which in itself composes a row of which any metropolis might well be proud. Since 1909 there have been erected south of Twenty-second street, which used to mark the limits of the row, many magnificent structures which are devoted solely to the sale of motor cars. This move on the part of many of the large dealers has produced what might be called a friendly rivalry among the tradesmen, some exploiting the wonderous advantages of the southern end of the row, while the other declare that the old locations north of Eighteenth street are the ones that produce the business. Indeed, it might be likened to a gigantic tug-of-war, the southerners, well established, coaxing their old friends in the northern section to join them, while the stand-patters are trying their level best to hold their own and perhaps win over a few recruits.

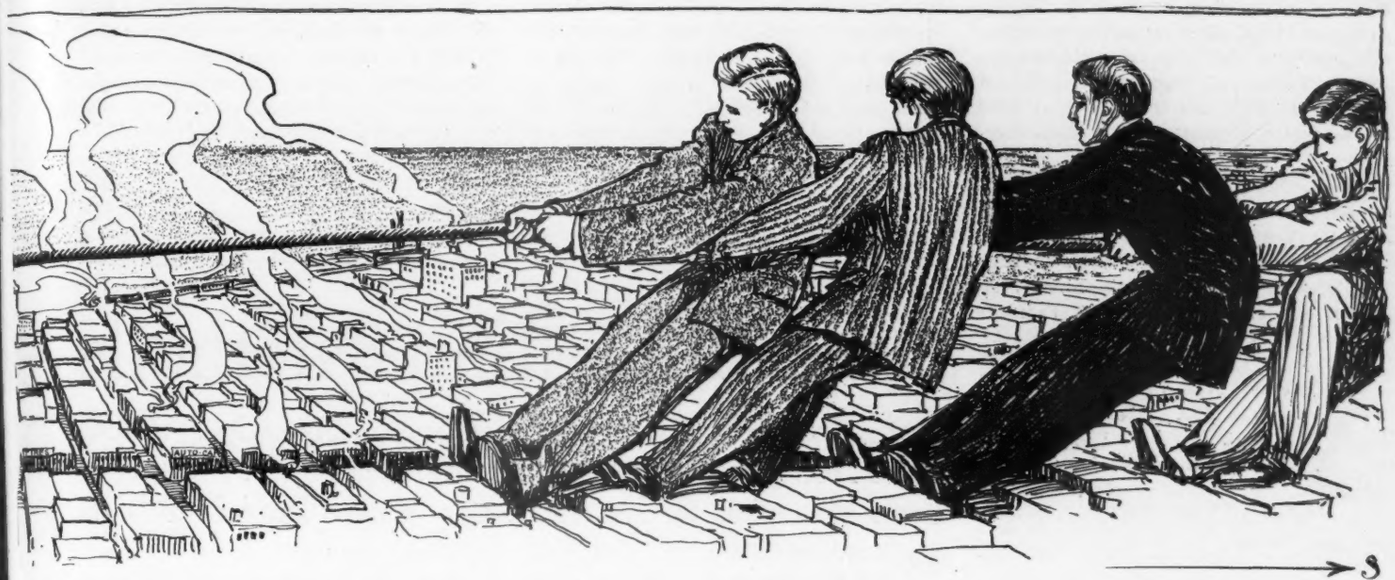
It looks like an even break at the present time with the southern colony inhabited by representatives of the higher priced cars and with that section containing the finest buildings. But not withstanding the defections from the northern end of the row there never seems to be any vacant stores left on the hands of the landlords. As soon as any one moves to the southern end, some other dealer comes along and grabs the old locations, the result being that Chicago's motor row at the present time is at least 1½ miles in length and with the stores on both sides of Michigan avenue.

Since the last show the southern colony has been strengthened by the annexation of the Packard, Overland, Brush, Thomas, Speedwell, Stoddard-Dayton, Peerless, White, Detroit electric, Fiat, Alco, Apperson, Amplex, Kisselkar, the combined Stevens-Duryea and Hudson agency, Enger, Moline, Marmon, Marion, Moon, and Pope-Hartford agencies, while the Corbin-Matheson agency has taken possession of its new store just south of Twenty-second street.

CHICAGO'S WONDERFUL ROW

Addition to colony gives nearly 2 miles of motor car stores in Michigan avenue

Another peculiarity of this moving craze, if we may call it such, but one which tends to make the row a solid line of stores, is the recent invading of the territory on Michigan avenue between Eighteenth street on the north and Twenty-second street on the south. Formerly there only was a small patch of stores in this stretch which included the Oldsmobile, Royal Tourist, E-M-F and Locomobile, but now the strength of the territory augmented by the erection of a



TUG-OF-WAR BETWEEN THE TWO ENDS, EACH TRYING TO GAIN RECRUITS FROM THE OTHER

Is Greatest Motor Mart In America

Changes Made in the Past Year Gives Nearly 2 Miles of Stores in Michigan Avenue, With Many Magnificent Structures Erected at Southern End—Tug of War Between Rival Sections

row of buildings on the east side of Michigan avenue and just south of Twentieth street. In this new building which opens with the show are located the Cino, Empire, Lexington, Oakland, Rayfield, Warren-Detroit and Waverley and Ohio electrics. Some of these are new agencies in Chicago, while others are leaving stores in the north end of the street.

Going into the old settlement—that stretch north of Eighteenth street—one finds but few changes in the building line in the past year. The last 12 months have seen the inhabiting of the new building of the Republic Tire Co., while across the street the Maxwell, Columbia and Alden Sampson are under the same roof. Down near Sixteenth street Adams & Engs have gone into a new structure with the Auburn, while another new building is the one on the west side of Michigan and north of Twelfth street where the Cartercar and American are housed and which expects to gain other motoring recruits within a short time.

There have been many changes in the stretch north of Eighteenth streets. The Abbott-Detroit and Krit have come in at 1725, being handled by the Centaur Motor Co., which formerly had the Oakland and Moon. Now the Oakland is handled by R. A. Wadsworth & Co., while the Moon is represented by a branch. The American has switched to the Townsley-Comstock Motor Co., at 322. The Apperson has moved from 1240 to its new branch at Thirty-third and Indiana, and its old store has been taken by the Elmore, which formerly was handled by Owen Fay. The Benz has become a factor in Chicago trade circles by the opening up of the Benz Motor Co., which shares the quarters of the Hearne Motor Co. which handles the Hupmobile at 1509. The Case and the Garford are two recruits of the year, both these cars being handled by the Morrison Motor Car Co. at 1716. The Cartercar Co. has opened a branch at 324, while at 1470 the Clark.

Some Other Changes

The Cole, Clark and Westcott are handled by the Cole Motor Car Co. at 1470. The Columbus electric has been turned over to the Farrington Automobile Co. at 1344, while the Columbia, formerly handled by Fred Jenkins, has gone over to the United States Motors at 1735. The Cunningham is another newcomer and is off the row a short distance, being located at 577 Wabash avenue with the James Cunningham & Sons Co. The Dayton electric, represented by the Centaur Motor Co. at 1725 Michigan, is another newcomer. The Grout, carried by the Garfield Park Automobile Co., has joined the row at 1407 where it shares the quarters with the Imperial which is handled by Ezra T. Wills. The Hudson, formerly handled by the Levy & Hipple Motor Co. along with the Chalmers has been transferred to Louis Geyler who recently moved to 2517. The Hupp-Yeats electric of course is located under the same roof with the Hupmobile at 1509.

The Ideal Electric Co. with the Ideal electric has established itself at 1413 Michigan avenue, while James Levy has put up a separate establishment for the Lozier at 1501 where he carries on the business as the Lozier Sales Co. The McFarlan six has brought about the rejuvenation of C. A. Coey as a dealer and this agency is located at 1424. Formerly Cornish & Friedberg, the concern at 1223 Michigan avenue now is known as Friedberg & Hart, handling both the Schacht and Metz. The Owen of course is coupled with the Reo at 1220, while the Selden is represented at 1409 by the Bullock Motor Car Co. The Staver-Chicago is about to come in at 1466 where it will be handled by F. Benjamin. The Waverley is at 2025. The Pratt-Elkhart is at 1413, and the Rainier at 1532 and the Henry at 1549.

STAMPEDE TO THE SOUTH

Beauty of Chicago's row enhanced by many magnificent new buildings in new territory

It is at the southern end of the row however, that one finds himself on strange ground but withal among friends, for all around him appear familiar faces. The Alco within the past year has become established in a magnificent building at 2501. The Amplex has opened a branch at 2429, the Detroit electric is at 2416, the Enger at 2337, the E-M-F and Flanders at 2030, the Fiat at 2349, the Cino at 2007, the Corbin and Matheson at 2210, the Empire at 2025, the Hudson at 2517, the Kisselkar at 2515, the Lexington at 2025, the Marion at 2450, the Marmon at 2447, the Moline at 2329, the Moon at 2728, the Oakland at 2007, the Overland at 2425, the Packard at 2357, the Peerless at 2500, the Pope-Hartford at 2637, the Rauch & Lang with the McDuffee company at 2457, the Rayfield at 2025, the Speedwell at 2411, the Stoddard-Dayton at 2457, the Thomas at 2259, the Warren-Detroit at

2009, and the White at 2635 Wabash avenue. These all have moved in within the past year and have as neighbors the Brush at 2328, the Cadillac at 2412, the Mitchell at 2334, the Oldsmobile at 2035, Pierce-Arrow at 2420, and the Premier at 2339.

The northern end of the row, by which is meant that part of the street north of Eighteenth street, those that have not moved include the Baker electric at 1219, the Buick at 1452, the Chalmers at 1467, Everitt at 1328, Ford at 1444, Franklin at 1450, Fuller at 1219, Halladay at 1421, Hupmobile at 1509, Jackson at 1219, Knox at 1458, Mora at 1529, Palmer & Singer at 1449, Parry at 1329, Paterson at 1420, Rambler at 1464, Regal at 1502, Renault at 1606, Reo at 1220, Chadwick at 1220, Schacht at 1233, Velie at 1615, Welch at 1452, Winton at 1259, Woods electric at 1408 and National at 1348.

STORES IN OTHER PLACES

Not all the agencies in Chicago are to be found on Michigan avenue

In addition there are several other makes of cars scattered around the city, and off the row. The Berliet finds representation at 499 Wabash avenue, while the Black Crow has headquarters at 1311 Rector building. The Diamond T is at 3 Huron street; the Falcar at the factory is 163 North May street; the Firestone-Columbus is at 383 Wabash avenue; the Lambert at 221 South Hoyne avenue; the Reading at 315 Fisher building; the Republic in the First National Bank building, and the Sears at 1352 West Harrison street.

From this it will be discovered that Chicago is unlike New York in that there are few foreign cars represented in the windy city. The list is a short one and takes in the Benz, Berliet, Fiat and Renault. Two of these, the Fiat and Renault, are branches while the Benz is handled by the Benz Motor Co. The Berliet is carried by Walden Shaw as a side issue to his taxicab business. However, Chicago never has been very strong on the foreign car although within the past year or so since the establishment of branches here the business in imported machines has picked up to a considerable extent.

Chicago Organizations

There are in Chicago two organizations which are working for the good of the industry. One of these is the Chicago Automobile Trade Association which has been in harness for the last 5 years and which represents in its membership nearly all the leading concerns. This association has not undertaken anything in the promotion line since the first year of its existence, that work being delegated to the Chicago Motor Club. Louis Geyler is president of the trade organization at the present time, but an election will take place very shortly when N. H. Van Sicklen, Sr. will succeed Geyler, there being only one ticket in the field. The other trade body is the Motor Truck Association of Chicago, which has been formed this month and of which Henry Paulman is president. The truck people expect to accomplish much good with their organization and at the present time they are bending all their efforts to booming the second week of the show when the commercial motor vehicle will hold sway.

Chicago is again more fortunate than New York in that it has sporting organizations which actually do something. One of these is the Chicago Motor Club which in the 4 years of its existence has been very prominent in the promotion of contests and which has scheduled for the coming season a fuel test on May 25, a hill-climb June 22, a Chicago-New York truck run July 19-29, national stock chassis road races August 25, 26, and a 1,000-mile reliability run October 9-13. One interesting phase of the fuel test

Modern Selling Methods

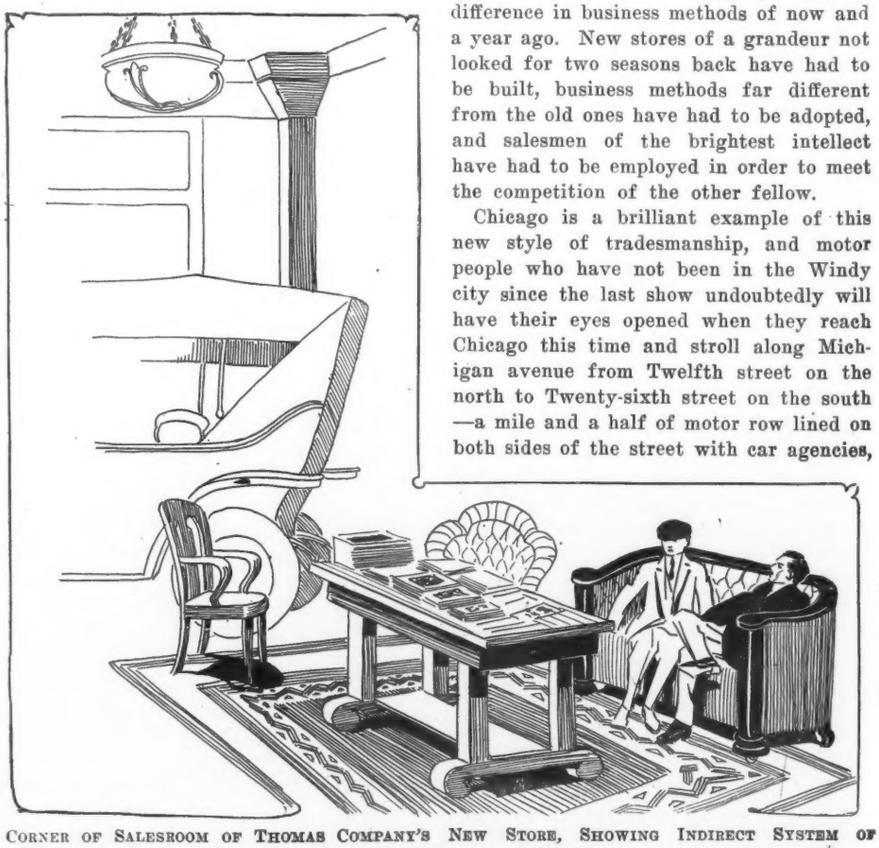
Strife To Dispose of Product Results in Live Ones in Big Cities Adopting Many New Ideas Which Require Big Investments of Capital on Their Part But Which Produce Results

MOTOR folk who are connected with the industry in one capacity or another have become students of the business, which fact is best illustrated by a study of conditions that exist in metropolitan cities like Chicago and New York where the motor rows are features of the business life. The keenness of the competition has brought a wondrous change in selling methods in the last few years and now the retailing of motor cars has become an art instead of a pastime, and those who posed as salesmen several years back, when in reality they were order clerks, now find themselves face to face with far different conditions—conditions that demand the highest grade of salesmanship and goods of reputation to back it all up. Nowadays the buying public is most discriminating in what it wants, there is no scarcity of cars and salesmen in the leading motor emporiums are called upon to do something more than take orders.

Changes in Conditions

In order to cope with these new conditions the dealers in the metropolitan cities have arisen to the occasion in a manner which bespeaks for them success in this line, but in order to keep in stride with the times these dealers have been forced to cast old fogy methods to the winds and branch out in an original manner which is more in keeping with the difference in business methods of now and a year ago. New stores of a grandeur not looked for two seasons back have had to be built, business methods far different from the old ones have had to be adopted, and salesmen of the brightest intellect have had to be employed in order to meet the competition of the other fellow.

Chicago is a brilliant example of this new style of tradesmanship, and motor people who have not been in the Windy city since the last show undoubtedly will have their eyes opened when they reach Chicago this time and stroll along Michigan avenue from Twelfth street on the north to Twenty-sixth street on the south —a mile and a half of motor row lined on both sides of the street with car agencies,



CORNER OF SALESROOM OF THOMAS COMPANY'S NEW STORE, SHOWING INDIRECT SYSTEM OF LIGHTING INTERIOR OF THE STORE

which was decided on only last week will be an official trial of benzine as a fuel. There will be three divisions in the run, one for cars using gasoline, another for cars burning benzine and a third which will be styled the non-contesting division in which makers may try out carbureters which are not stock on the cars on which they are fitted. This innovation is expected to produce interesting results.

The Chicago Automobile Club has done considerable along its own peculiar line, and probably the biggest feather in its bonnet is the promotion of the inter-club reliability team match with the Chicago Athletic Association which has done more to interest owners in motoring contest than any other event in the country. The Chicago Automobile Club also maintains an excellently handled bureau of tours which furnishes information to its members.

Illustrated In Chicago

Windy City a Good Example of Trend of Times—Departmentization of Business One of Features—Going After the Country Prospects in New Manner Sample of the Progress

tire branches and supply houses, and undoubtedly the greatest motor car selling thoroughfare in the United States, if not in the world.

FORTUNES INVESTED IN STORES

Magnificent buildings erected in Chicago cater to the retail motor car business

The strangers will find the 12 months have brought a great change in conditions in Chicago, a shifting of the center of gravity so to speak and with the southern end of the row now a brilliant array of handsome buildings which are devoted solely to the motor industry. The strangers also will discover that the past year has brought about many changes in the method of doing business in Chicago. They will find that among the concerns handling the higher priced cars it has been found necessary to open establishments that call for vast expenditures of money and capital. An idea as to the extent to which some of these concerns have gone is shown by the fact that one of them has an investment of $25,000 in its establishment and that simply as an agency and not as a factory branch. It has been found necessary to introduce many new ideas into the business and to work along far different lines than those which formerly produced big sales and big profits.

Going After Prospects

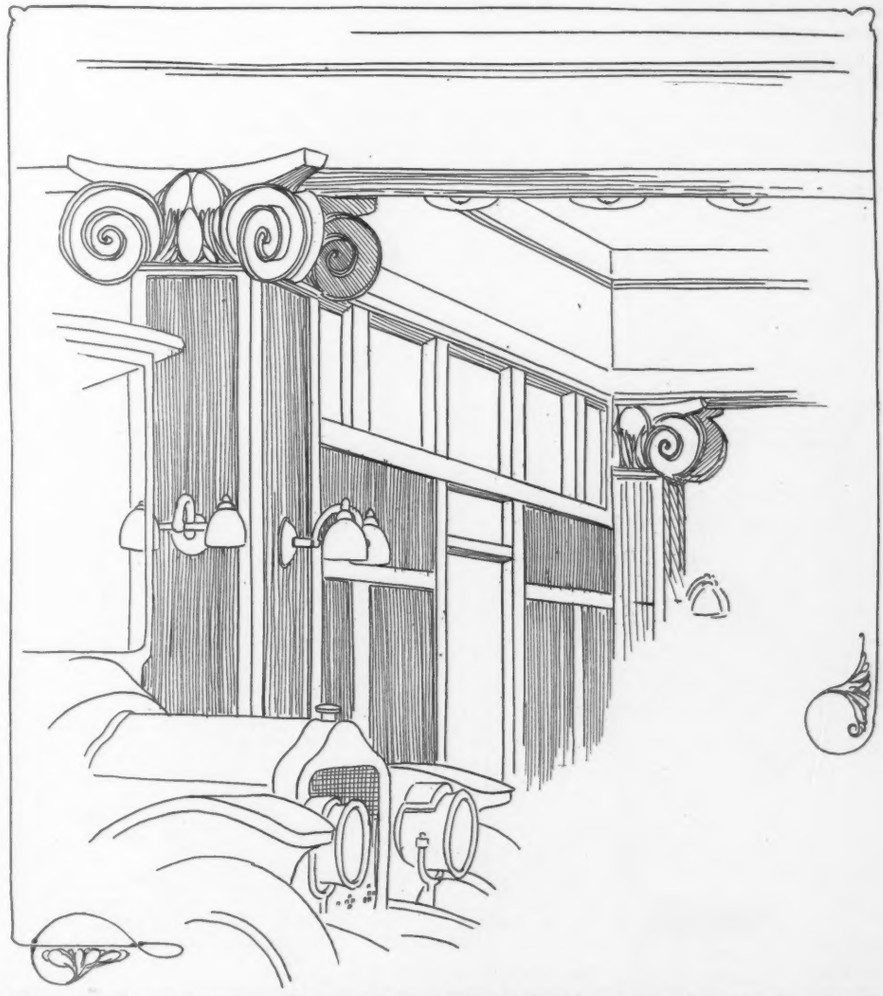
No prospect is deemed too insignificant to go after and the fierceness of the competition even has forced, or rather brought to the attention of the dealers handling the higher priced lines, the benefits to be derived by sending salesmen throughout the adjacent territory in cars to make personal sales rather than to trust the business to agents in the smaller towns. Indeed, such a trip produces far more business than one would suspect at first thought and it is no unusual thing to find salesmen who have been out on the road this way for 1 and 2 months and who have in that time covered from 3,000 to 5,000 miles on such trips.

Thinking it over, one can readily see why such trips should be productive of much good. Every little hamlet has at least one person who can afford to purchase a car listing in the neighborhood of $3,500 to $4,500, but the trick is to discover this person and then to interest him or her in the proposition the salesman has to offer. A wise salesman is sent out on such an expedition armed with the names of the owners of cars which he represents and that salesman's first duty upon striking a town is first of all to call upon these owners and give them first opportunity to try out the new models on a short demonstrating trip. Then these owners in turn help the salesmen by telling him of other prospects in the neighborhood as it is no unusual thing for the motor drummer to stay 4 and 5 days in a good-sized town and carry away with him orders that he could not have got by any other method.

DEMONSTRATING IN THE COUNTRY

Many sales made by sending representative and car into smaller towns

Demonstrating cars to people in towns on small trips is far easier than handling city folk. In most cases the villagers are satisfied with short rides and usually they have in mind some steep hill or rough spot in their immediate vicinity where they wish to see how the car will perform. A man with a good machine has no difficulty usually in meeting these demands. Also it is found that these country people are as fully alive to the situation as the motorists in the big city and that chauffeurs are in most instances hired to drive the cars of the rich men of the smaller towns. But these chauffeurs are not imported talent, in most cases being boys of the town who have taken a likening to motor-



WHITE IS NOW LOCATED IN NEW HOME ON WABASH AVENUE, WHICH IS REMARKABLE FOR ITS INTERIOR DECORATIONS

ing and who have picked up the odds and ends of the profession until they are qualified to care for a car.

It is rather surprising that these missionary trips are confined mostly to representatives of the higher priced cars, but an explanation of this, it is stated that it has been found far better to send personal representatives around in this manner rather than to appoint agents hit and miss for in some cases such agents are found to be either unpopular with their fellow townsmen or else they are not sufficiently equipped to represent the car in the proper manner.

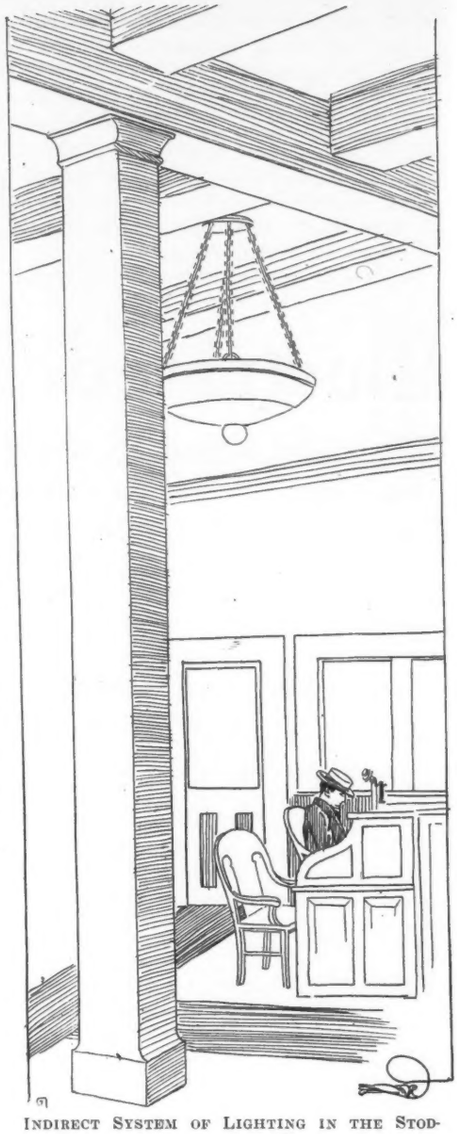
Visit Chicago Stores

But the country agent is learning his business rapidly, which fact is well testified to by Chicagoans who find them called upon daily either to answer long letters from country representatives or else receive personal calls from them and show them through their establishments. The country dealers are filled with pride and hearing of the wonders of Chicago's motor row come to the Windy city to get pointers before investing their small fortunes in the erection of garages and salesrooms.

That they come to a fertile field when they visit Chicago goes without saying, for a trip through the southern end of the row where most of the new buildings have gone up during the past year is well worth anyone's time. Refinements such as never were thought of a couple of seasons back have been introduced into building methods in Chicago, and the motor establishments will compare favorably with those of any other city of the country and Chicago dealers will not bow their heads even to New York. Chicago has the buildings—that's a certainty, but it has claimed that in business methods New York has it on the Windy city—although that point is disputed.

Some New York Methods

It is asserted that New York has specialized more than has Chicago in adopting the proper business methods. For instance, it is said that in New York there has a departmentization of business that has relieved the salesman of much worry in taking from him the responsibility of caring for a customer after the car has been sold. In New York a big establishment is subdivided. One department simply sells the cars, another department handles all repairs and still another takes care of the second-hand business. If a customer has any repair work to be done he does not go to the man who sold him the car, but to the repair department direct. If he wants to buy a second-hand car he goes to that department. Each is a department in itself, but all these units are brought into a composite whole which means a successful business. Chicago, however, is learning fast and there are few metropolitan ideas that have escaped the tradesmen in the national show city.



INDIRECT SYSTEM OF LIGHTING IN THE STODDARD'S CHICAGO AGENCY

FRONT ENTRANCE TO CHICAGO PEERLESS BRANCH LOOKING FROM INTERIOR AND SHOWING UNIQUE CEMENT POSTS AND PALMS

LIGHTING THE NEW STORES

Two systems, direct and indirect, are used by Chicago motor car dealers

Particularly noticeable about Chicago's new motor establishments is the lighting effects which have been secured by the intelligent manner in which this important subject has been considered, the result of which is a row which at night blazes with light from beginning to end and which is one of the sights of the great city. On this subject though, the row is divided, some of the dealers favoring one system of lighting and the others another, but both factions depend upon electricity to produce the desired results. The newer scheme of lighting is called the indirect system in which tungsten lamps fitted to a cluster throw their rays first onto the ceiling which in turn deflect them to the room below. This idea is brought out only 2 years ago, but in that time it has gained well deserved popularity. Such

concerns as the Stoddard-Dayton, Alco, Kisselkar, and Detroit electric are advocates of this system. The art of lighting a store in this manner is a science and requires the service of a practical electrician to carry out. In the first place the room to be lighted must be decorated in a manner to take advantage of every ray of light. These decorations must be light in tone and care must be taken in placing the lights. Each cluster must be hung with mathematical accuracy and every position of the room studied to get the full benefit of the system. The common practice is to use four tungsten lamps of 100 watts each to each cluster. A room 35 by 60 feet would require six such clusters.

ILLUMINATING THE STORES

Indirect lighting system feature is that no shadows are cast upon the salesroom floor

The feature of this indirect method of lighting is that the light is distributed evenly and that there are no shadows cast. This latter will be appreciated by dealers who often find when showing cars at night that the fine points of body finish are lost by some deep shadow.

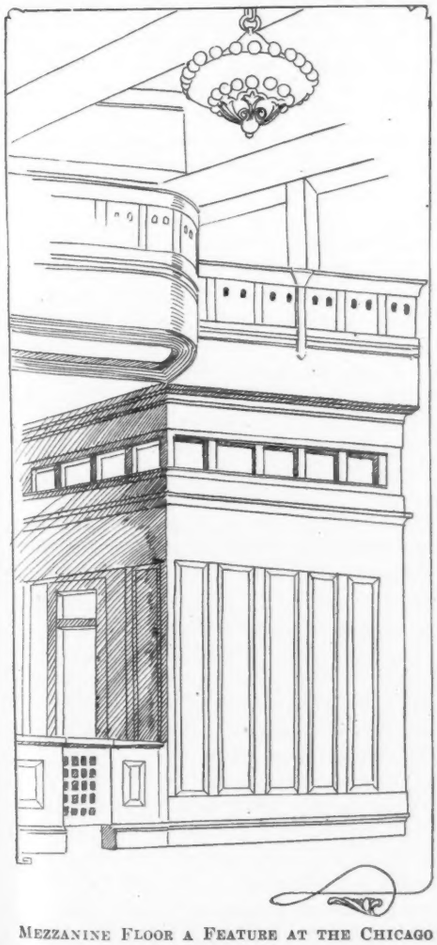
The other system of lighting is the direct one which is found in varied forms. Some concerns like the Pierce-Arrow and Fiat in Chicago, use what might be called the beam scheme which consists in placing rows of lamps on the vertical side of rafters in the ceiling, the effect being a soft light which adds greatly to the beauty of the salesroom. Other concerns like the Packard and the Cadillac use the cluster scheme which consists of a series of chandeliers to each of which are attached clusters of frosted incandescents which throw their rays direct to the floor.

There is much difference of opinion as to the relative value of each system, the advocates of the direct style of lighting claiming that theirs is less expensive and the light just as good. Be that as it may, the fact remains that the indirect people claim that they are well satisfied with their bargains and one of them declares that his increased lighting bill is compensated for by the fact that he believes he has an advertisement that makes his store stand out above those of his neighbors. While this man has not kept any comparative figures, he points out that whereas his lighting bill now is twice as large as it was in his old store still he has four times the floor space.

LIGHTS IN REPAIR SHOPS

Clever ideas of electricians make for the safety of the dealer and repairman

The art of the electrician is not confined wholly to the salesroom, however, for evidence of the advance in the lighting of business houses is found in the garage and repair shop. No longer does the wide-awake dealer content himself with stringing a row of incandescents in his repair shop, placed at irregular intervals and with no thought of whether or not the workman can take full advantage of the light. There are no unsightly extension lights which run from the ceiling lamps and which either are pulled from their sockets or else trip the workman. Now



MEZZANINE FLOOR A FEATURE AT THE CHICAGO PACKARD AGENCY

HENRY PAULMAN, PIERCE-ARROW AGENT IN CHICAGO, ADAPTS MOTOR CAR LAMPS TO HIS LIGHTING SCHEME IN HIS NEW STORE

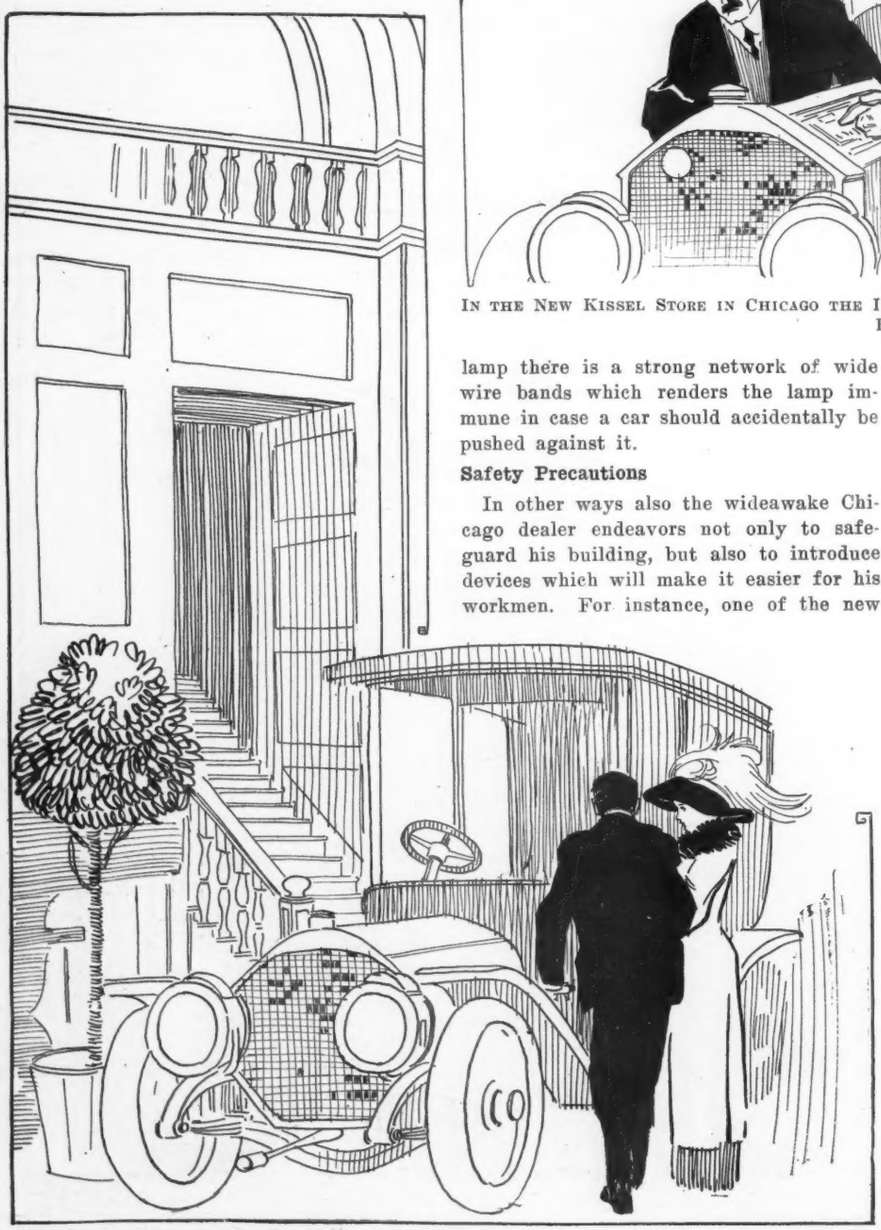
there are plugs in the side wall about 1½ feet from the floor and placed at intervals of 10 feet, from which run the extension cords which the workmen use around the cars. By this method the repairman always has a light handy and in case he moves the car and forgets to place the lamp out of harm's way the only damage done is to pull the socket from the plug in the wall.

Another good idea in this line has just been introduced into Chicago and seems particularly valuable in washrooms where there is danger of fire in case one of the bulbs is broken. Such a lamp is placed in the side fixture about 3 feet from the floor and the lamp hangs downward. To protect it from harm the lamp is inclosed in a thick vessel of glass which resembles a miniature mason jar such as fruit is preserved in and which screws into a socket of its own. To still further protect the lamp there is a strong network of wide wire bands which renders the lamp immune in case a car should accidentally be pushed against it.

In the New Kissel Store in Chicago the Indirect System of Lighting Gives a Brilliant Effect

Safety Precautions

In other ways also the wideawake Chicago dealer endeavors not only to safeguard his building, but also to introduce devices which will make it easier for his workmen. For instance, one of the new things noted is a device which is used in the repair shop of the Kissel which consists of a zinc-lined box on wheels which is one-quarter filled with kerosene and which is used for washing the grease off parts of the cars that are being repaired. This box being on wheels it is possible to run it alongside the car so the workman is saved many steps. Another advantage is that by using kerosene instead of gasoline the insurance people are satisfied and the rates of insurance are lower than they would be otherwise. The same caution is observed in other places along the row and at the Packard plant in particular is found a good idea—the gasoline room as it is called. This is a well ventilated room which is fireproof and it is the only one in the building in which gasoline s kept. No matter how trivial the cause a workman must go to this room in case he desires to clean any parts with gasoline.



Probably One of the Most Stately Appearing Stores in Chicago Is That of the High Effect and Displays the Cars to Advantage.

NEW IDEAS IN THE SHOPS

Crane in place of pit is one of the features found in several Chicago establishments.

The Kissel, Stoddard, Pierce, and several others also make use of cranes in their repair shops which does away with the necessity of having repair pits. At the Kissel place there is a 2-ton crane on wheels which has proven a very handy article about the shop. When a workman desires to jack a car up in order say to fix or take out a rear axle a steel bar is run transversely through the two rear springs and the crane lifts and holds

firmly the car while the work on the axle is being done. This same idea prevails so far as the front end of the machine is concerned. Several of these concerns also make use of a dumb waiter which brings all the floors into communication with each other and which is particularly valuable in bringing about rapid transit between the stock room and repair shop. At the Stoddard place the dumb waiter is electrically-operated and can be stopped at any floor desired simply by pressing a button. In this manner a great saving of time is effected.

SOME OF THE MODERN LUXURIES

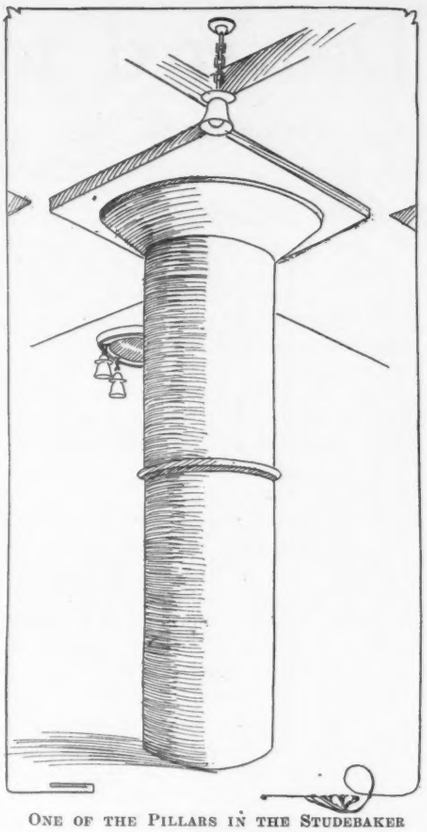
Comfort of the customer evidently the first thought of the progressive car dealer

Something out of the ordinary is found in the new Peerless store in the shape of an electric passenger elevator which can be operated without the services of a regular elevator operator. This is for passenger service only and runs up four floors. In case a salesman desires to take a customer from the first to the fourth floor he simply pushes an electric button which causes the elevator to descend to where he is, the doors being opened simultaneously with the arrival of the car. The salesman and his customer step on to the car, the salesman pushes the fourth floor button and the elevator ascends to that floor stopping automatically, and the doors open. There is no danger of anyone being injured by this conductorless elevator for the reason that the doors to the shaft all are securely locked and are opened only automatically by the arrival at the particular floor of the elevator.

It is well worth any one's time to visit the Peerless store and note the new ideas that have been put into execution in providing a place for the retailing of motor cars by modern methods. The new Peerless building is a four-story affair with the main repairshop on the top floor. In addition to a saw-tooth roof with a skylight there is light from three sides which is greatly appreciated by the workmen. Another luxury is that the toilet facilities are of the individual type and with cleanliness the keynote of the entire work shop. In the rear of the building there is a freight elevator 25 feet in width that is capable of bringing up even a huge truck. On the second floor of this building are located the offices of the company and in addition the country business is looked after. Here also are handled the second-hand cars. Another Peerless feature is the shower bath in connection with the lavatory on the first floor and in addition each salesman and clerk has an individual locker.

Some New Wrinkles

In all respects the establishments of the Packard and Stoddard-Dayton are fully as up-to-date as the Peerless. The Packard has many new wrinkles and in its new building will be found every facility for looking after the mechanical end of the Packard business, even to the charging of storage batteries belonging to customers. The Stoddard building is a complete plant in itself including a paint shop, a top-making department, a blacksmith shop, wood-working department, and in fact everything that is needed to handle such a big business. Here as well as at the Peerless and other places is a block which is used for testing motors after they have been overhauled and before they are sent out.



ONE OF THE PILLARS IN THE STUDEBAKER SALESROOMS.

SELLING BY MODERN METHODS

Examples of the latest ideas in equipment of some of Chicago's car agencies

The Pierce-Arrow agency is one of the pioneers at the southern end of Chicago's row and although it is only a two-story building it is fitted with every convenience. To the countryman who comes to Chicago for ideas, the second floor will strongly appeal. This floor is used for overhauling and machine work and is reached by large electric elevator. The stock room is on the second floor also, and is made accessible from the street by a stairway which permits chauffeurs to obtain any supplies they may want without passing through the salesroom or garage. Throughout the salesroom and garage sockets have been installed in the baseboard about 10 inches up from the floor. This eliminates the annoyance often caused by the car rolling over the electric light wire when hung from the ceiling, tearing out the sockets. These sockets are of such construction that in case they are caught they will disconnect automatically and not destroy the cable in any way.

CHICAGO HOME OF THE STEVENS AND HUDSON FINE EXAMPLE OF THE NEW STYLE OF ARCHITECTURE USED IN MOTOR CAR STORES

Death Blow Delivered to the Glidden

Manufacturers' Contest Association Recommends that American Automobile Association Promote National Reliability Run Instead of the Classic-Tour From Washington, D. C., to Ottawa, Canada, Suggested, for Cup Donated by President Taft of U. S. A., and Earl Grey, of the Dominion

CHICAGO, Feb. 2.—If the recommendations of the Manufacturers' Contest Association are accepted by the American Automobile Association when the latter's executive committee meets tomorrow afternoon the Glidden trophy will be shelved and in its place there will be hung up a cup of international significance, a bit of silver, which will be paid for jointly by President Taft of the United States of America and Earl Grey, governor-general of Canada—if those two rulers listen to the request of the motorists of this country.

Glidden Loses Favor

The fate of the Glidden was decided today at a special meeting of the Manufacturers' Contest Association, held at the Blackstone hotel in this city, and attended by a representative lot of makers. The opinion of the tradesmen was that the historic piece of silver now held by the Chalmers has outlived its usefulness and that there should be substituted a tour for a national cup, which should start from Washington, D. C., capital of the United States, and finish in Ottawa, capital of the dominion. The prize for this, the M. C. A. thinks, should be a trophy jointly offered by President Taft and Earl Grey, and if the recommendation is accepted by the A. A. A. efforts will be made at once to get the two dignitaries to hang up the silver.

Chairman Butler, of the A. A. A., did not get a satisfactory response from the makers as regards entries for the tour. While all those present believed there should be a national tour, none of them stood ready to pledge any entries until they know the conditions and route. But the enthusiasm shown over the national tour was of such a character that Butler ought to feel assured of plenty of support.

Other Plans Endorsed

The Manufacturers' Contest Association also endorsed several other pet schemes, chief among which was the national circuit, which, however, is only tentatively adopted, it remaining to be seen just what support the makers will give the affair. The meeting also favors the employment of a paid technical committee, but leaves it up to Butler to devise ways and means to pay this committee. The board of review idea, a supreme court to which a protest can be carried upon payment of a $1,000 fee, also was endorsed by the meeting.

The first part of the meeting was devoted to a discussion of the stock car rule, which had been referred to a committee for interpretation. The definition of the stock car was revamped in order to make it more readily understood by the promoter in any part of the country. The definition heretofore has been all written in one paragraph, but now it is divided into eleven sections and each one numbered.

Definition of a Stock Car

The definition remains practically as it was, but has been amplified. It is now necessary for a stock car to be registered with the contest board 30 days in advance of when it can be entered in a contest. After the contest committee receives the certificate of registration, containing all of the car specifications, from the factory, it will send a member of the technical committee to the factory to check up these specifications and see if twenty-five cars of that model have actually been made. Once these specifications are checked over, the contest committee will accept the model and give it a registered number. Before any stock car will be accepted there must be twenty-five machines completed. But the stock car definition does not stop here: after building the twenty-five, it will be necessary for the company to continue building this model in order to produce the necessary percentage called for by the rules.

Commercial Makers Considered

The question of rules for tests of commercial cars or trucks was discussed at length and a committee consisting of Walter White, James Joyce and Walter Wardrop appointed to investigate the matter of securing suitable rules for such tests. It was the general consensus of opinion that many of the commercial vehicle tests conducted during the past fall were of little value due to the poor rules. It was argued that many of the rules were based on fuel and oil consumption, which are, all told, but 10 per cent factors in the operation of trucks. It was suggested real test rules be prepared, or rules that will test cars from all viewpoints. One or two were in favor of not permitting any commercial tests to take place until adequate rules to govern them were prepared.

QUAKER SHOW

Philadelphia, Pa., Jan. 28.—After 2 weeks of uninterrupted success, during which time the highest hopes of the most optimistic were exceeded, Philadelphia's tenth annual show came to a successful end this evening. While the average daily attendance during the second week, devoted to motor trucks, delivery wagons and electrics, fell slightly below that of last week, it was all that could be desired, and the interest manifested has been a source of joy and profit to all concerned. Then, too, it should be remembered that visitors to the final week's display were not merely of the purely pleasure-seeking class, being composed in the main of men who attended for the purpose of having demonstrated to them just why it would be to the advantage of themselves and to the houses and firms they represent to permanently supplant the horse-drawn method of transporting their wares by the motor-propelled vehicle to meet the in-

Hoosier Syndicate Buys Remy Plant

INDIANAPOLIS, IND., Jan. 30—Interests represented by Stoughton A. Fletcher, a banker of this city, have purchased the plant and property of the Remy Electric Co. at Anderson. While details of the deal have not been made public, the consideration is understood to be approximately $1,000,000.

A new company will be organized and incorporated within a few days, at which time Mr. Fletcher's associates will be known. The factory will continue operations at Anderson and B. P. Remy and Frank Remy, who owned the plant, will remain there to assist the new owners for a short time.

Special attention will be paid by the new owners to the manufacture of a recent Remy invention, a combination magneto and device for manufacturing electric current for lighting motor cars, which is expected to create a sensation.

The Remys held about 80 per cent of the common stock. Other stockholders were C. W. Hooven, Robert Dorste and Walter Howe. Hooven, 5 years ago, invested $6,000 in common stock and $14,000 in preferred stock, and received dividends on common stock last year amounting to $65,000. It is understood he will receive about $300,000 by the sale of the plant. Dorste and Howe originally invested $1,000 each, which eventually grew to $7,000 and a change in the plan of capitalization gave them dividends amounting to about $80,000 last year. They will receive about $100,000 by the sale of the plant.

creasing demands being made on their delivery systems. And never, in this city at least, have the manifold advantages of the truck been more forcibly demonstrated as regards economy, facility of transportation, relative speed and reliability. It may be said, without fear of successful contradiction, that in number of actual and prospective sales and in interest aroused and maintained, the show has set a mark that will be used as a basis of comparison in future events of its kind.

And what is true of the truck section of the show holds equally as well as far as the electrics were concerned. The ease of operation, grace and general degree of cleanliness of this machine have especially commended it as an ideal town car for women, and it was this portion of the show that was the particular object of attention on their part throughout the week.

In connection with the motor vehicle show this week local city and fire department officials were treated to the sight of a motor fire engine in action on Friday. The test was held preparatory to the acceptance by the city of this style of fire fighter, which, if the committee of local officials witnessing the demonstration agree was a satisfactory one, will eventually supersede the horse-drawn vehicle and its attendant difficulties. An appropriation looking toward that end has already been provided by the council, which will probably be applied to the outlying sections, they being the first to benefit.

MANY AT STODDARD DINNER

Chicago, Feb. 1.—Among the social features of show week was the dinner given this evening by the McDuffee Automobile Co., local distributor of the Stoddard-Dayton cars. The dinner was given to the officials of the Stoddard company and the forty-five sub-agents of the McDuffee company scattered throughout western Iowa, southern Wisconsin, Illinois, western Indiana and western Michigan. The McDuffee company, with its sub-agents, takes one-sixth the entire Stoddard factory output. Among those in attendance were C. G. Stoddard, president Dayton Motor Car Co., and H. J. Edwards, designer; C. S. Jameson, sales manager; R. T. Houpt, factory superintendent, and H. J. Hayden, purchasing department. The McDuffee company was represented by H. L. Babcock, H. C. Tillotson, E. J. Elles and C. A. Englebeck.

FRISCO SHOW POSTPONED

San Francisco, Cal., Jan. 23—San Francisco's proposed show, which was to have been given February 4-11 under the auspices of the San Francisco Motor Club, has been postponed for a month. A statement just issued by President Henry M. Owens, of the Motor Club, sets a new date of March 4-11. The object of the postponement, it is stated, is to permit some of the exhibitors to secure cars which are first to be exhibited in the Chicago show. On the other hand, it is stated that the real cause of the delay is the refusal of a large number of the local dealers to participate in the exhibition. It is stated also that the show may not ultimately be held, although this is vigorously denied by President Owens.

The announcement of a show for February a couple of weeks ago led to a conference of the members of the Motor Car Dealers' Association and this organization reaffirmed a decision which it reached last September to take no part in any show other than the recent Oakland exhibition to be held within 6 months. These dealers, who represent almost every one of the best known cars on the local market, claim that the present condition of the local market does not warrant the holding of a show, which they declare is a very expensive proposition. The members of the association laid the matter before other dealers, and many of these signed their names with the members of the association as opposed to the holding of a show at the present time. Advertisements to the effect that these firms would not exhibit were inserted in all the San Francisco papers.

Chalmers Talks to Chicago Dealers

CHICAGO, Jan. 28—The annual banquet of the Chicago Automobile Trade Association, held last night at the Chicago Athletic Association, was as usual, a curtain-raiser to the show in that it brought together the local tradesmen and some of the big exhibitors who took advantage of the occasion to review trade conditions and felicitate themselves on the prosperity that looms up ahead. The affair also marked the beginning of the end of present administration of which Louis Geyler is the head. The annual election which will take place shortly will see Mr. Geyler succeeded by N. H. Van Sicklen, Sr.

Chalmers One of the Speakers

With Thomas J. Hay acting as toastmaster the evening was featured by the remarks of Hugh Chalmers, president of the Chalmers Motor Co., who addressed the meeting on salesmanship, the speech bristling with witty epigrams and toned throughout with optimism as to the future of the industry, which Mr. Chalmers believes is as solid as a rock, ranking at present as third greatest in the United States.

Mr. Chalmers contended that "salesmen should be able to guarantee to the customer $1's worth of actual service for every dollar invested in a car," and held that "sincerity of purpose, next to reputation, is the most important thing in selling motor cars." He deprecated the knocking of competitors' goods and made the fine distinction that there is a vast distinction between comparison and knocking, claiming the first is legitimate and the latter illegitimate. Price-cutting also was discussed and Mr. Chalmers pointed out that if there is to be any price-cutting it should be done when the price first *is* put on the car, and not by the dealers. He pointed out that salesmanship nowadays shows a marked difference from that of yesterday in that now a car is sold in a salesroom and not over a glass of champagne in a barroom.

Continued Demand Assured

Continued demand for cars is assured by the interest taken in them by the boys who are the purchasers of tomorrow. Another good point brought out along this line by Mr. Chalmers is that the possession of a motor car is an asset of the owner in that it is evidence of his prosperity, standing in front of his residence. Mr. Chalmers warned salesmen against getting too technical when talking to a prospect. Every man is not mechanically inclined, he says, but each is possessed of a certain pride which prevents him from acknowledging he does not understand mechanics, and while he may pretend to grasp all the points, his mind often is in a whirl at the end which upsets all the arguments which may have been advanced.

There's a reason for the refusal of a prospect to buy, Mr. Chalmers contended, and if a salesman can learn that reason he is bound to profit by the knowledge. But Mr. Chalmers claims there is a great difference between a reason and an excuse for not buying, and it is the reason the salesman wants.

"There's an old saying that 'honesty is the best policy,'" said Mr. Chalmers, "but I don't believe in that. Times have changed since that was first phrased and now it is 'honesty is the only policy.'"

Other Good Speakers

Other good speakers there were last night, including Vice-President Schuyler, of the Michigan Avenue Trust Bank, who talked on the relations between the bankers and the motor trade. S. A. Miles, general manager of the N. A. A. M., explained the various angles of the different motoring organizations. David Beecroft, president of the Chicago Motor Club, pointed out the marvelous growth of the industry, while F. L. Estey, of the Chicago Examiner, spoke on the relations existing between the press and the trade. Everett C. Brown, president of the Amateur Athletic Union and former president of the Chicago Athletic Association, declared that in all the years he has been connected with amateur athletics he never before saw such sportsmanship that is exhibited in the annual interclub team reliability match between the Chicago Athletic Association and the Chicago Automobile Club, and his praise showed plainly just what a hold motoring competitions are gaining on Chicago owners of motor cars.

Detroit Again Talking Outdoor Show

United Automobile Dealers' and Manufacturers' Association Discussing an Exhibition For March—Lozier Plant Ready to Start—Thomas Neal Given Plum by General Motors Co.

DETROIT, MICH., Jan. 30—The United Automobile Dealers' and Manufacturers' Association which recently held a successful independent show, simultaneous with the D. A. D. A., which has hitherto held the boards alone in this department of activity, is considering the advisability of holding an open-air show in March, dating the event so that it will take place at about the time of the opening of the season for outdoor pleasure driving. The association has gone so far in its arrangements as to open negotiations for the state fair grounds, for the affair, and hopes to be able to use the large motor building on the grounds, and the race track..

A spring show has been broached in Detroit for several years, but has never yet materialized, under the old regime. Whether or not the new association will see fit to continue its plans as the date approaches, is a doubtful matter. The association is, however, greatly elated at the result of its first attempt, has formed a permanent organization and, at a banquet, held to celebrate its successful show, demonstrated that its membership was full of enthusiasm for the second project.

Lozier Ready to Open

An event due to occur here during the latter part of the week is the formal occupation of the new plant of the Lozier Motor Car Co. out the Mack road. This plant has been in process of construction for several months and is now virtually completed. The administration building will be the first to receiye its occupants. The sales, advertising and other departments which have been operated in New York city are now being moved to Detroit and the fine five-story building which has housed the Lozier interests in the metropolis will be given over entirely to the use of the local branch there.

Just when the local factory will begin to turn out Lozier cars is a matter which has as yet been left indefinite by the company. A large amount of new machinery has been ordered and the time required for its delivery and installation is the element which will determine the date of the opening of operations.

Practically all the Detroit factories are working at full speed now. The Ford is producing more than 125 cars a day and this record is being almost equaled by the E-M-F. The Cadillac is enjoying the busiest winter in its history. The Chalmers plant is producing in the neighborhood of ninety cars a day. The Krit is getting into its new factory building and has a large amount of machinery already in place, the process of installation being materially aided by the fact that the building was last year used by the Owen Motor Car Co. and was consequently already adapted in a general way to the manufacture of motor cars.

Commercial Test On

During the week an interesting demonstration of commercial car effectiveness was given by a Warren-Detroit delivery wagon which was put into bona fine service in the use of several Detroit merchants. Accurate track is being kept of the expenditures for driver, supplies and maintenance, as well as the amount of depreciation. The test will be continued for 30 days, the work of each day being done for a different employer. Up to date the car has averaged about fifty calls a day, with a mileage of 75 miles and an expense, as outlined above, of about $2.50. The test is attracting considerable interest as a genuine novelty, aside from the practical feature.

Alfred Langer, representing Traugott Golde Co., Gera, Reuss, Germany, has been in Detroit for several days, examining into the conditions of the local trade, with a view to establishing a branch of the firm in this city. The Traugott Golde Co. is a large manufacturer of tops. Mr. Langer has received tentative orders from twenty-one manufacturers in Detroit and Michigan, and probably will report favorably on his return to Europe.

The most noteworthy event in the local retailing field has been the occupation by the Ford Motor Co. of its new garage at the corner of Woodward avenue and North Grand boulevard. The building is of the most advanced type of construction, is situated in the very center of the district which is used by most of the local dealers and factory branches, and has ample capacity, both for sales and repairs, and storage.

Willett Welch-Pontiac Manager

W. R. Willett, for several years with the Marquette Motor Co., of Saginaw, has been appointed general manager of the Welch-Pontiac Motor Co. This plant is part of the General Motors group. Mr. Willett announces that the Welch-Pontiac plant will manufacture no more motor cars but will be used as a motor factory solely from now on, its product being absorbed by the General Motors. It will feature a motor for use in a commercial vehicle.

The Cole Motor Sales Co. is the latest of the new local salesrooms. It has secured quarters near the Ford on Woodward avenue, above the boulevard. Otto A. and Charles Seestedt are the men behind the firm in this deal.

A suit has been begun in the circuit court by the Detroit Valve and Fittings Co. against the Sibley Motor Car Co., to recover possession of the factory of the latter company, located at Mackie and Solvay avenues. Default of payment on a land contract is alleged as the basis of the proceedings.

Thomas Neal Chosen

Thomas Neal, for years the head of the Acme Qualities Co., of Detroit, and one of the best known manufacturers of this city, has been chosen by the board of directors of the General Motors Co. to be the president of that concern. Mr. Neal's acceptance of the position is announced. The salary, it is stated on good authority, has been placed at $50,000.

The meeting of the board of directors at which Mr. Neal's election was made, also resulted in a full choice of officers as follows: President, Thomas Neal, Detroit; vice-president, E. O. Wood, Flint; secretary, Standish Backus, Detroit; treasurer, James T. Shaw, Detroit; comptroller, C. A. Magee, Detroit.

Mr. Neal was selected, it is understood, because of his remarkable record as a successful manufacturer and a systematizer. He has not been identified with the motor car manufacturing industry heretofore, the Acme Qualities being a maker of paint. It is understood that he will retain his connection with the Acme Qualities, though he has systematized the work of that position to an extent which will allow him to devote all his energies at present to the reorganization of the General Motors.

Until further announcement and, perhaps, permanently, the headquarters of General Motors will be located in the upper floors of the Buick salesroom on Woodward avenue. Whether or not other arrangements will be made later, is a matter of doubt. At present both Mr. Shaw and Mr. Magee have offices there.

QUAKERS HOLD BANQUET

Philadelphia, Pa., Jan. 27—Unanimity of opinion with respect to the compulsory abolition of country toll gates, the building and maintenance of good roads, the excellent work being done by the Quaker City Motor Club in that direction, and the Fairmount Park road race characterized the remarks of the speakers at the third annual banquet of the Quaker City Motor Club, held at the Hotel Walton on Tuesday evening. Joseph P. Rogers acted as toastmaster and after reviewing briefly the history, aims and accomplishments of the Quaker City Motor Club introduced the speakers of the evening.

Charles Thaddeus Terry, chairman of the legislative board of the A. A. A., re-

sponded to a toast with a speech scintillating with wit, and incidentally raked over the coals the much-abused phrase—"state's rights"—in many cases, so far as motorists are concerned, he said, they amounting to "state's wrongs." He laid especial stress on the fact that in only one particular—that of speed—did the motor car differ from any other vehicle that used the roads, and said that there was no ground upon which the motor car should be discriminated against any more than a horse-drawn vehicle, and deplored the fact that such should be the case. He advocated the federal registration of motor cars and pictured the advantages of the latter, whereby, upon the issuance of a license, the motorist could travel from Philadelphia or New York clear to the Pacific coast without being held up at the border line of every state and forced to contribute to the revenues of the state.

Webster Grim, late candidate for governor of Pennsylvania on the Democratic ticket, made an appeal for the farmer, who, he said, was not responsible for all the ills laid at his door. He felt especially qualified by experience, he said, to speak on the subject of good roads, during the November campaign having traveled continuously by motor car all over Pennsylvania and finding road conditions generally in a deplorable condition. He said the building of good roads would not amount to much unless the maintenance of them was well provided for, which he advocated being done by the state—not by the several townships. He favored the abolishment of toll roads and the licensing of cars solely for the purpose of identification, not as a means of providing revenue.

TAFT MAY BE AT SHOW

Washington, D. C., Jan. 27—Plans for the national motor car show to be given by the Washington dealers during the week of February 13, are rapidly maturing. The show committee has the project well in hand and the indications are the annual exhibition will be the largest and best one in the history of the local trade. It is whispered about in trade circles that President Taft will again honor the show by his presence. It will be remembered that last year President Taft, who is an ardent motorist, dropped into the show late in the afternoon and spent some time inspecting the various cars. He was so pleased with his visit that it is thought probable he will repeat the visit this year.

Every inch of space has been taken in the show and there are a number of prospective exhibitors clamoring for room in which to show their goods. How to meet the demand is one of the problems confronting the show committee.

Railroad Sends Out Good Roads Train

Pennsylvania System Trying to Educate Farmers as to Need of Improving the Highways so Freight May Be Moved Easier—Lecturers Dispatched to Spread the Doctrine in Keystone State

PHILADELPHIA, Pa., Jan. 30—Unique among the efforts of the Pennsylvania railroad to encourage the good roads movement in the state of Pennsylvania will be the operation of a good roads educational train, which will be in charge of the Pennsylvania State College, co-operating with the roads department of the national government and the state highway department of Pennsylvania. The train, consisting of four cars, is being used for lecture purposes in villages and small towns along the lines of the Pennsylvania railroad. One car is fitted up with a lantern for the illustrations of the lectures. Another car is used for exhibits, showing models of several types of roads such as earth, sand-clay, gravel, macadam and telford. This car also contains a series of photographs and drawings for illustrating the different methods of drainage and kinds of construction required for special conditions. Two flat cars contain samples of the most important machinery required for service in road-building, also a home-made roller, drag, and sprinkling wagon. The exact cost and methods of construction of the roller and drag are shown in detail.

Railroad's Plans

The Pennsylvania railroad has for some time been conducting a campaign in the interests of good roads. Literature has been disseminated and lectures have been given in a number of towns. The company has announced its desire to do everything in its power to improve the roads radiating from its stations in order that they may be kept open during the winter months, thereby facilitating the movement of freight to and from the stations.

By the operation of this train the railroad company hopes to carry the gospel of road-building into every section of the state. The train will stop in each township along the railroad, where good roads meetings will have been previously advertised. Evening meetings will be held in theaters or courthouses of the larger cities, while the exhibits will be open day and evening, with experts in attendance to give explanations and answer questions.

Figuring the Cost

The state's experts on good roads say that the average cost per ton mile of hauling over the ordinary dirt roads of the country is 25 cents. It also has been proved that a very large saving can be made in this item at a comparatively small cost for proper drainage and preparation of the roads. As 92 per cent of the roads of the United States are made of dirt, it is evident that an improvement in this direction is well worth consideration. In fact, careful calculations have shown that the country could be saved an actual expenditure of over $100,000,000 per year if the roads were of first-class construction and suitably maintained.

Maintaining the Roads

In the lectures given on the good roads special an item that is emphatically dwelt upon is the necessity for and proper methods of maintaining roads after they have been constructed or improved. The state department men say that many thousands of dollars are thrown away annually on account of failure to maintain roads which cost large sums to build and which, through neglect have rapidly deteriorated to a condition where they must be wholly rebuilt.

The Pennsylvania State College has two experts on the train, the United States government has sent one of its best trained men, and the state department of highways of Pennsylvania also is represented. Representing the Pennsylvania Railroad Co. are officers of the divisions over which the train will pass.

MORE GOOD ROADS ENTHUSIASM

Milwaukee, Wis., Jan. 30—"Wisconsin, topographically, geographically, and from a scenic point of view, is destined by nature to be the playground of the middle west. Given good roads into Wisconsin and throughout the state, hundreds of thousands of tourists would spend the summer months in the state, leaving millions of dollars of money within our boundaries."

This was the keynote of the annual report of Francis A. Cannon, secretary, to the Citizens' Business League of Milwaukee, one of the leading business men's organizations in the United States.

The annual meeting of the association was in reality a mammoth good roads rally and at its conclusion every business man in Milwaukee was pledged to work heart and soul for immediate highway improvement.

The Wisconsin Brotherhood of Thresher-men adopted strong resolutions at the annual convention in Madison last week, on the good roads problem. Convict labor on good roads work was strongly urged. While the thresherman's interest in highway improvement is natural, the convict labor proposition is the result of attempts in Wisconsin to turn all convict production into the binder twine manufacturing line.

The Readers' Clearing House

EDITOR'S NOTE—In this department Motor Age answers free of charge questions regarding motor problems, and invites the discussion of pertinent subjects. Correspondence is solicited from subscribers and others. All communications must be properly signed, and should the writer not wish his name to appear, he may use any nom de plume desired.

HAS TROUBLE WITH LAMPS

GREENCASTLE, Mo.—Editor Motor Age—Will Motor Age kindly answer through the Readers' Clearing House the following questions?

1—Why does water get in the pipe line from the generator to the lamps? I have a new carbide generator and the water seems to go entirely in the one tubing. The tubing is brass with short rubber connections. The lamp burns fine after starting up and then after a while it will begin flickering and jar out. The other lamp works all right.

2—Why is it that when starting up the engine with advanced spark and closed throttle, that the moment one begins to open the throttle it will kill the engine? Is it because the engine is not warmed up, or is it the air adjustment on the carbureter?—Auto Owner.

1—Your trouble is characteristic of most systems in which a generator is employed, especially at this time of the year. Since water is used to generate the gas, and as considerable heat is generated from the chemical reaction which takes place between the water and the carbide, much of the water is carried off in the gas currents in the form of vapor. When this vapor comes in contact with the cold piping, condensation is bound to occur, and unless provisions are made to either prevent the condensation, or provide a means of properly draining the water which accumulates in the pipes when condensation does occur, the pipes will at times become partially choked, causing the lights to flicker, or become entirely choked for an instant and the lights extinguished.

Much of your trouble would be eliminated if, perhaps, the troublesome tube were arranged on more of a slant. The best method of placing the piping is along the inside of the channel of the frame. It is necessary that the line or leads from the generator to the lamps be on as much of an incline as possible, and that traps of an efficient design be placed at the lowermost point in the line to catch the water of condensation. In Fig. 1 is shown a diagram illustrating a correct method of arranging the piping for gas lamps. It is a simple system that any repairman should be able to make and install at but slight expense. The pipe to each lamp should be independent, except at the trap, and gas from the generator should enter the trap below the piping to the lamps. The drain cock of this system should be opened at least once a week and the pipe should be fastened securely to the frame so as to prevent chafing.

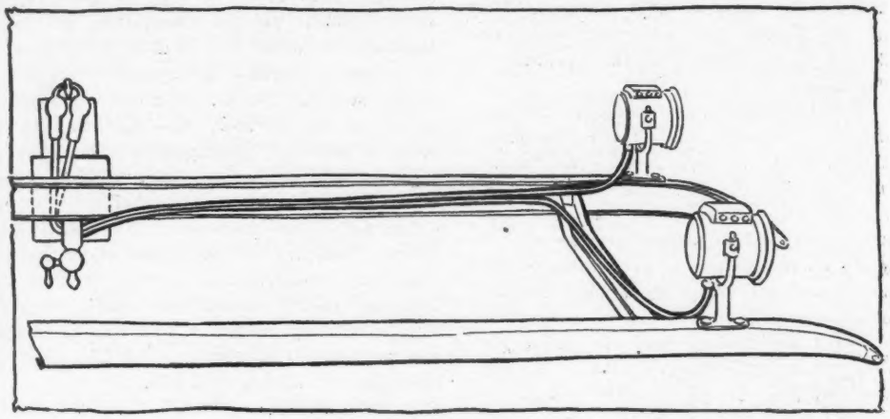


FIG. 1—SHOWING HOW GAS PIPING SHOULD SLANT DOWN TO CONDENSATION TRAP

2—The stopping of the engine by opening the throttle suddenly is due either to an idiosyncrasy or peculiarity of the carbureter, to weakness of the auxiliary air valve spring, to little globules of water in the bottom of the carbureter float chamber, or, perhaps, to the fact that the motor is cold. This is a characteristic of many motors. When the throttle is opened suddenly, if the auxiliary air-valve spring is of such design that it is opened too readily, an excessive proportion of air will be admitted to the mixing chamber and the mixture weakened to such an extent that it loses its combustibility; thus the motor will be stopped, or choked, so to speak. If there is water in the carbureter, sudden opening of the throttle will cause an agitation in the float chamber and the quick suction of fuel therefrom will cause some of the water to be drawn into the nozzle and the fuel choked off.

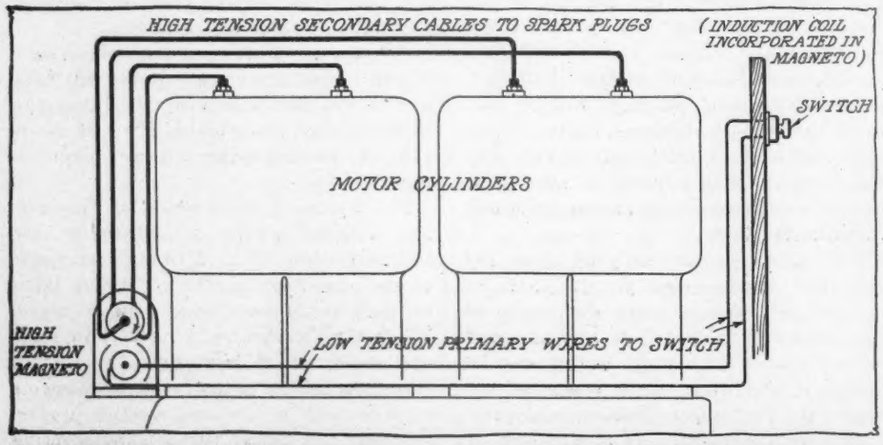


FIG. 2—WIRING DIAGRAM OF JUMP SPARK IGNITION SYSTEM WITH TRUE HIGH-TENSION MAGNETO

FEATURES OF THE CREEPER

Chicago—Editor Motor Age—Through the Readers' Clearing House will Motor Age kindly give me the dimensions and plans for constructing a motor creeper?—Norman Ibsen.

Plans and dimensions for a creeper are given in Fig. 3; but Motor Age would suggest that unless you have unusual facilities for making one of these handy little contrivances, it would be far cheaper to buy one ready-made from any of the large motor car supply houses. They are extremely useful in cases where one is required to crawl under and lie on one's back under a car.

BRAYTON ENGINE DEFINED

Reading, Pa.—Editor Motor Age—The heading in the Ford-Selden suit report which appeared in Motor Age, issue January 12, looks to me as though it might do injustice to the makers of two-cycle engines and cars, of which I happen to be a small representative. The Brayton engine was of the two-cycle kind, strictly speak-

Motoring Questions Answered

EDITOR'S NOTE—To the Readers of the Clearing House columns: Motor Age insists on having bona fide signatures to all communications published in this department. It has been discovered that the proper signature has not been given on many communications, and Motor Age will not publish such communications, and will take steps to hunt down the offenders of this rule if it is violated.

ing, but not in the sense that we use the word today.

The usual steam engine is likewise a two-cycle, but we do not use the word that way. The difference between the Brayton engine and the engines of today, whether two or four-cycle, lies in the method of operation. The Brayton was fed its charge from a pressure tank and took more or less of it just as does a steam engine. It therefore was called a constant-pressure engine. It was an engine of the compression type. Modern engines take in a charge of any desired size, which once in cannot be lessened or increased, and therefore is called a constant-volume engine. The pressure varies according to the richness of the mixture and many other things. The present-day two-cycle works on the same principle that the four-cycle engine does, except that it uses fewer strokes to do it. In short it is an improved form of modern engine.—Charles E. Duryea.

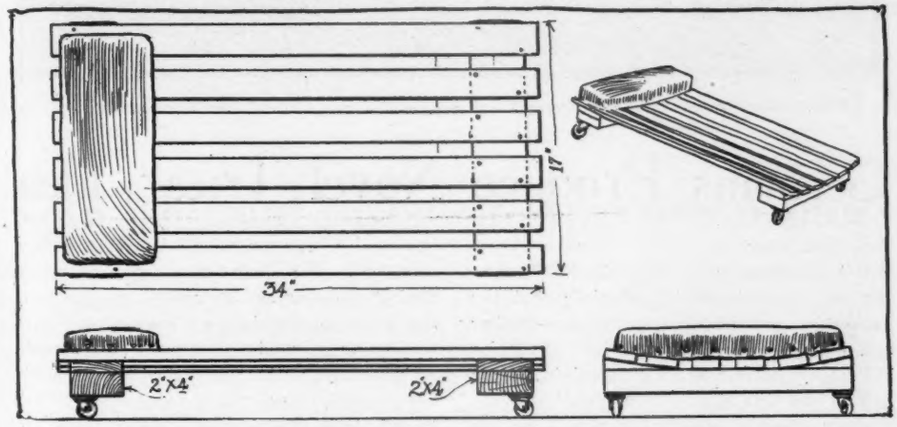


FIG. 3—SPECIFICATIONS FOR CONSTRUCTING A CREEPER WHICH IS USEFUL UNDER A CAR

HIGH AND LOW-TENSION WIRING

Middletown, O.—Editor Motor Age—Through the Clearing House, will Motor Age kindly answer the following questions:

1—I have a Firestone-Columbus torpedo roadster, which has both batteries and Splitdorf magneto. I have noticed that it will start almost as easily on the magneto as on the dry batteries. Judging from this fact, is it a high or low-tension ignition system?

2—Is the wiring the same in both the high and low-tension systems used?

3—Does the Columbus Buggy Co. manufacture its own engines in this Firestone-Columbus machine? If not, where are they made?

4—Is the show in the Coliseum at Chicaga run by the A. L. A. M., or is it open to unlicensed as well as licensed cars?—Middletown Reader.

1—The readiness of a motor to start on the magneto almost as well as on the battery does not determine the type of the ignition system. Practically all of the jump-spark ignition systems, in which a spark is made to jump across a gap or fixed distance between the points of a spark plug, are high-tension systems; and the make-and-break and magnetic plug systems are the only low-tension ignition systems in common use on motor cars.

2—The wiring of a high-tension magneto jump-spark system is practically the same as that of a low-tension magneto system with magnetic plugs, except that the thoroughly insulated high-tension wires used between the magneto distributer and the plugs are not required in the low-tension system. In the low-tension make-and-break system the wiring is more simple than in any of the other systems because all of the spark plugs may be connected to a single bus-bar, to which but one primary or low-tension wire is attached. Presuming that you might have intended to ask for the difference between the wiring of jump-spark systems using high and low-tension magnetos, two simple diagrams are shown in Figs. 1 and 4 which may be of assistance to you.

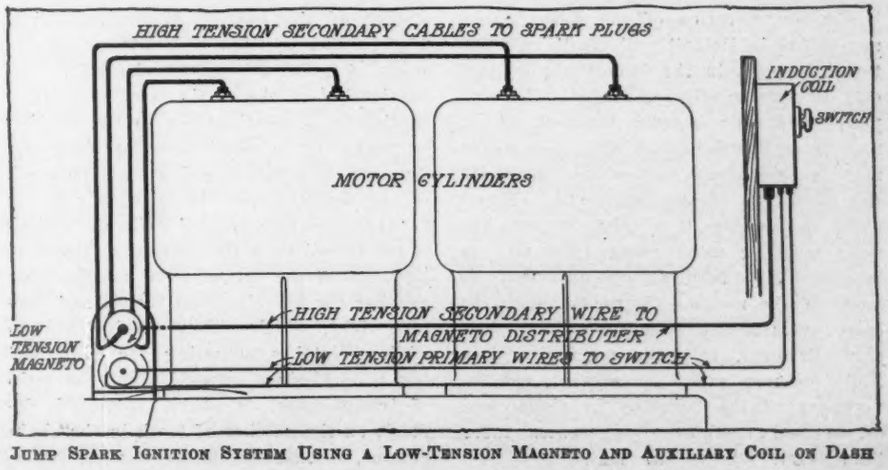
3—A Northway motor is used in the Firestone-Columbus car, and it is made at Detroit, Mich., by the Northway Motor & Mfg. Co.

4—The show in the Coliseum at Chicago is run by the National Association of Automobile Manufacturers, and is open to all manufacturers of motor cars and accessories thereto, except those who have exhibited their products at unsanctioned shows within 18 months preceding.

SUGGESTS NEW FUEL

Pamona, Cal.—Editor Motor Age—I have two two-cycle cars, an Elmore and a Paige-Detroit. I have been experimenting with Dystilole as a fuel and find that both of them burn the Dystilole well after they are once warmed up. I do not see why makers of cars do not fit cars with two carbureters, one to feed from a small tank of gasoline to start with, and one to switch on to to feed from a Dystilole tank after the engine is heated up. This would enable an owner of a car to burn mostly all Dystilole at 8 cents per gallon instead of gasoline at 17½ cents per gallon, and still have no trouble with starting.—C. S. Whitham.

Up to the present the price of fuel has not been a big factor compared with the other expenses in running a car. As soon as the fuel cost becomes a factor it will then be quickly taken up by many carbureter makers and a carbureter brought out that will be able to handle both fuels.



JUMP SPARK IGNITION SYSTEM USING A LOW-TENSION MAGNETO AND AUXILIARY COIL ON DASH

The Realm of the

SAMPSON MOVES TO DETROIT

FORMAL announcement of the large plans of the Alden Sampson Mfg. Co. have created a stir in Detroit manufacturing circles. This firm is now operating a large factory just north of the city in Hamtramck. Up to January 30 it also operated a large factory at Pittsfield, N. J. The machinery of the Pittsfield plant is now on the way to Detroit. When it arrives, and is installed, Detroit will be in possession of the largest motor truck factory in the United States and, in all probability, in the world.

The decision to abandon the Pittsfield plant and concentrate all the energies of the Alden Sampson Co. in Detroit was recently made. The details have been arranged by Morris Grabowsky, the vice-president of the company.

On January 30, when the assigned work at Pittsfield had been completed, the loading of two special trains was begun, motor trucks being employed for much of the transportation between the factory and the siding. It is estimated that the work of transporting the machinery and other equipment will consume in the neighborhood of two weeks. The trains will be left on the Alden Sampson company's Detroit siding and work will begin immediately, installing the machinery.

Up to date the Detroit factory has been manufacturing the Alden Sampson 35 pleasure car and the company's 3-ton, 2-ton, 1-ton and ½-ton trucks. The Pittsfield factory has been manufacturing the company's road train, and the 4 and 5-ton trucks. The Pittsfield factory has been in operation since 1904. The Detroit factory is a development of the past year, since the absorption of the Alden Sampson company by the United Motors Co., of which it is now the truck department.

The concentration of the Alden Sampson plants in Detroit will result in a material increase in the importance of that city as a manufacturing center. The company will take several hundred of its men from Pittsfield and will, it is stated manufacture every part of its cars, with the exception of the tires. The Detroit plant is capable of a large output, the main building alone being 1,020 feet in length. No definite announcement is made of the number of trucks which the company intends to manufacture. It does plan, however, to make no fewer than 2,500 pleasure cars. At present, the investment of the company in plant, real estate and machinery aggregates more than $1,000,000.

GERMAN TRICAR READY FOR TOURING

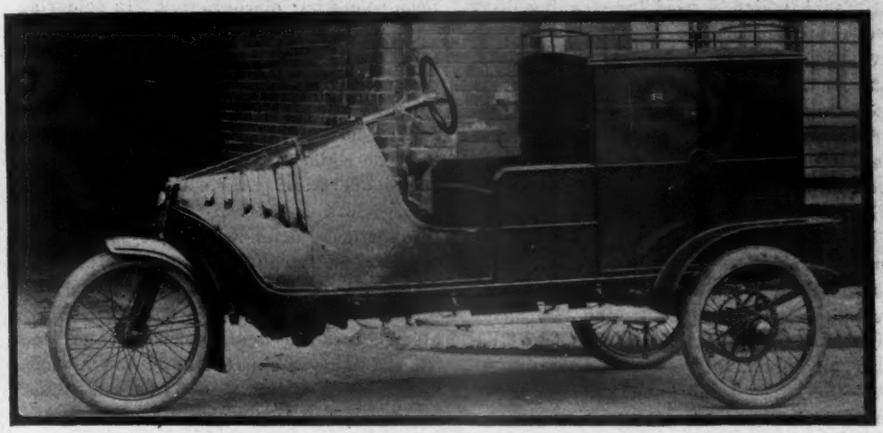
Germans Produce Novel Tricar Idea

IN designing its novel tricar the Tourist Automobile Works of Berlin-Tempelhof was guided by the principle that the economic qualities of a motor car—rubber and gasoline consumption as well as repairs are mainly determined by its weight. Only one of the rear wheels is operated through a chain, the two speeds being obtained by varying the ratio of chain pinions. Apart from the motor, the internal organs of the vehicle are thus reduced to a minimum. The air-cooled V-shaped double-cylinder motor, which with a bore of 81 millimeters, 90 millimeters stroke and about 1,600 revolutions per minute yields about 7 horsepower, is located below the hood at the rear of the fore wheel. Its suction valves are mechanically operated and the exhaust valves are suspended above the cylinders, so that the burnt gases can be quickly discharged, thus improving the cooling and considerably increasing the output of the motor. Magneto-electrical high-tension ignition with adjustable moment of ignition is used exclusively. The lubrication of the motor is effected automatically, proportionately to the number of turns, by a small rotating oil pump. Another oil pump placed within the reach of the driver allows the oil supply to the crankcase to be increased. The air-cooling is reinforced by a fan located in front, at the level of the valves. The vehicle has a gearing for effecting two speeds and running light, which mainly consists of two sliding clutches actuating the high and low transmissions respectively. The ratio of transmission, as above mentioned, depends on the number of teeth in the chain pinions, so that by exchanging the latter, the vehicle can be adapted within a few minutes to the most difficult ground. The sliding clutches are actuated by a switching lever to the right of the driver. The vehicle is steered by means of a hand-wheel acting upon the fore-wheel through the intermediary of a pair of bevelled wheels, thus effecting an instantaneous reversal. The Tourist tricar is fitted with two self-contained brakes working in two directions, one of which is actuated by a pedal, while the other—an internal brake enclosed in a dust-tight box and acting upon the rear wheel—is actuated by a hand-lever beside the driver's seat.

WANTS SPECIAL ARMY CAR

The war department at Washington has been asked to appoint a board of officers to make a special study of motor cars with a view to designing a machine adapted to army purposes. This is recommended by Lieutenant-Colonel L. W. Littell, chief quartermaster of the department of the east, who for some time past has been investigating the question. Colonel Littell believes that the motor car would be of great service to an army in time of war, but says that a special type of machine should be designed for military purposes, of plainest construction, without bright metal of any kind, and with all paint work of dull finish. These cars, he says, could be readily arranged so that two or three people could use them for camping purposes. Heavy trucks, as well as the smaller cars, in the belief of Colonel Littell, would be valuable for the moving of supplies of all kinds, and the necessary baggage for troops.

Commercial Car



GERMAN TRICAR WITH COMMERCIAL BODY

New England Firemen Approve Motor

THE Fire Chiefs' Club of New England went on record last week in favor of motor apparatus for fire departments when it held its monthly meeting at Boston. "Have motor propelled vehicles as applied to fire apparatus passed the experimental stage; can horses be dispensed with?" was the subject discussed. Chief Lane, of Manand Cade, of Wakefield, Mass., were the first speakers and they stated that there was no question about motor apparatus being the real thing. Other speakers who were recorded in favor of motor vehicles were Chief John A. Mullen, of Boston; Chief Greene, of Concord, N. H.; Chief Dahill, of New Bedford, and ex-Chief Hopkins, of Somerville. Chief Mullen told of the motor equipment of the fire department at present and what additions are coming. Representatives of the companies that put out fire apparatus were guests at the meeting.

MILWAUKEE'S MAIL SERVICE

Motor car postal service will be continued in Milwaukee, Wis., the first city in the United States to have its mail carried by motor vehicles. Postmaster David C. Owen, originator of the idea, has returned from Washington with assurances that there will be no change, because of the success of the system not alone in Milwaukee, but in Indianapolis and other leading cities. In connection with the continuance of the service the postoffice department is now experimenting with another idea of Postmaster Owen, a letter box which delivers the contents from the bottom, and which has been patented by Mr. Owen. The letter box idea is the result of the evolution of the postal motor car system, the standard boxes now in use being responsible for a waste of time in making rapid collections. Tests of the box will be made in all cities having motor car delivery and collection service.

TEST OF DECATUR TRUCK

A 1-ton Decatur truck made a very creditable run from New York to Boston last week, carrying a full load to demonstrate its ability to the men who were negotiating for its agency in Boston. It started from New York at noon Sunday with A. H. Barnard in the driver's seat and A. H. Edmonson as a passenger. Accompanying it were B. A Robinson and E. F. Prior, two members of the Taylor Motor Sales Co., of Boston, who were in a Herreshoff car.

The party proceeded first to Bridgeport, reaching there at 8 p. m., where they stopped over night. The next morning they left at 9:35 for Hartford, getting to that city at 6:55. A start was made Tuesday for Springfield at 10:45 and the run was made in 1 hour 30 minutes. At 3 o'clock that same day they started for Worcester, reaching it at 6:35. This was another night stop. The following morning the run was made to Boston, leaving Worcester at 10:30 and getting to Boston at 2:55.

The distance traveled totaled 261 miles, as the road was lost on the first day and a detour was made. An average of 8 miles per hour was made for each gallon of gasoline and less than 1 gallon of oil was used. The truck had all sorts of weather and the roads were in bad shape, but it stood the trip well. The Taylor Motor Sales Co., of Boston, took the agency right away.

COMMERCIAL BREVITIES

Because of the straitened condition of the treasury at Milwaukee, Wis., the request of Fire Chief T. A. Clancy for a motor fire steamer has been laid over until next year. The apparatus is desired for use in the residence districts, where stations are far between. Although the chief and the first assistant chief have been granted touring cars for official duty, the first real motor fire apparatus in Milwaukee has just been placed in service. It is an Abresch-Cramer combination hose and chemical truck.

The common council of Madison, Wis., the state capital, has authorized the committee on police to invite bids for furnishing a motor ambulance car. Bids will be submitted to the council at its February meeting.

The Sheboygan Evaporated Milk Co., of Jefferson, Wis., is about to purchase two motor trucks for gathering milk in the vicinity. The plant was established only a year ago and the receipts are now so large that several routes will be planned to relieve producers of the burden of making extra trips to the factory with their extra supplies. It is planned to ultimately collect all milk by truck.

The Wisconsin Traction, Light, Heat and Power Co. has installed a Johnson motor truck, made in Milwaukee, in its terminal at Appleton, Wis. Several Johnson trucks with special bodies carrying repair rigging are in use in Milwaukee, where the street railway system is owned by the same interests as that in Appleton.

A 6-hour saving over driving time was made on the initial trip of the motor truck purchased by Schmitt Brothers, proprietors of the Sandrock Spring Co. at Whitewater, Wis. A converted Oldsmobile, carrying a load of 1½ tons of water in bottles, made the trip over a certain route in 5 hours. With two horses it required at the least 11 hours of time to negotiate the distance, and the load necessarily was less when horses were used.

Merchants at Appleton, Wis., are contemplating putting into operation a unique coöperative plan of delivery and passenger service. Six stores plan to purchase a motor bus and lay out a number of principal routes into Appleton, one to be selected each day to bring customers to the central market. The lines of business done by the six purchasers are not widely different, proving that they have faith in the utility of the project, encouraging competition rather than monopolizing the results to be obtained.

The Motor Car Repair Shop

IN the larger motor car repair shops considerable soldering now is done which in previous years was sent to some neighboring tinsmith, and an illustrated description of the equipment used in the repair of motor car radiators and other features of a motor car that sometimes require soldering, may be of general interest. The sketch shown in Fig. 1 was made in the repair shop of the Chicago Motor Car Co., the local distributors of Packard cars. Beginning at the right in this illustration, at A is shown a board containing the switch and starting-box of an automatic air supply system, the motor, pumps and the greater part of the compressed tank being located in a cupboard under the work bench, as indicated by the dotted lines, and only the top of the compressed air tank with the valves and gauges upon it being exposed. Next in order comes the tinsmith's tool box, acid receptacles, a heating oven for soldering irons and a water trough for testing radiators for leaks. In the foreground is a flat, square work bench especially adapted for supporting the radiator during the soldering operation, and at the extreme left the forge is shown. The air from the supply system is required: in a blow torch of special system that is used in some of the soldering operations, in the oven for heating soldering irons, for producing the blast in the forge, and for testing and cleaning radiators. In this air supply system 40 pounds pressure is maintained in the tank for the purpose of heating soldering irons, using the blow torch and providing the blast for the forge; and as only 10 pounds is required for testing radiators, a reducing valve V is provided. D is an earthenware dip pot, containing a dilute solution of sal-amoniac and water used for cleaning soldering irons. E is a receptacle containing a dilute solution of muriatic acid, which is used for cleaning dirty work preparatory to tinning. N is an oven heated by a mixture of gas and air; and in and under the oven a number of soldering irons of various shapes and sizes are arranged. The water trough just at the left of the work bench has a soft wooden rack fastened in the bottom of it, which is designed to support the radiator without injuring it; and attention is called to the convenience of the air hose H, its valve L, the electric light removably supported on the standard S, and the water pipe W. The work bench or table T is also an important feature, as it is of just the right height and size, of heavy construction, and of soft wood.

Hints for the Amateur

The air supply system of this outfit is a stock construction known as the automatic Artizan air supply system. It consists of a pressed steel seamless tank 12 by 36 inches designed to safely carry 110 pounds working pressure, a Westinghouse electric motor and an A-B-C power air pump, all mounted upon the same base. The motor can be run from any incandescent lamp socket. It is equipped with an automatic cut-out, which automatically starts the motor when the air pressure is reduced 10 pounds and automatically cuts out the power when the air pressure rises to 110 pounds, or whatever pressure may be required below that point, thereby using the exact electrical energy necessary for the work and no more. The automatic cut-out is adjusted to permit a range of 5 to 10 pounds. It cuts out at 110 pounds or whatever point below that may be required, and will start at about 100 pounds or whatever point that may be required.

A few words in connection with this on tinning and soldering may be appreciated by some of the readers of Motor Age whose experience in this line of work has been somewhat discouraging. In soldering any two parts together, it is most essential that both contact surfaces be absolutely clean and bright. The hands and tools brought in contact with the work must be free from oil or grease, and cleanliness must be rigidly maintained throughout the entire operation. A clean file, scraper or emery cloth is generally used in preparing the surfaces, after which they should be warmed, and swabbed with prepared acid. The soldering fluid generally used may be prepared in the following manner: To ¼ pint of muriatic acid, add scrapes of zinc till the acid ceases to bubble and a small piece of metal remains. Let this stand for a day and then carefully pour off the clear liquid, or filter it through a cone of blotting paper. Add to this a teaspoonful of sal-amoniac, and when thoroughly dissolved the solution is ready for use. The soldering iron, or copper bit, which is constructed of copper on account of the qualities of that metal to absorb heat readily and as rapidly give it off again when brought into contact with other metals, should be kept clean and well tinned to facilitate its use in distributing the solder as desired. If allowed to become overheated, crustations will form on the end of the copper bit, which will usually have to be removed with a file before the iron can again be used. A very good addition to a soldering outfit for cleaning irons is a piece of flourite, or flour spar as it is generally called. This is an excellent flux, and after an iron has been cleaned and heated and then rubbed on a piece of flour spar the tin or solder will spread itself and adhere beautifully.

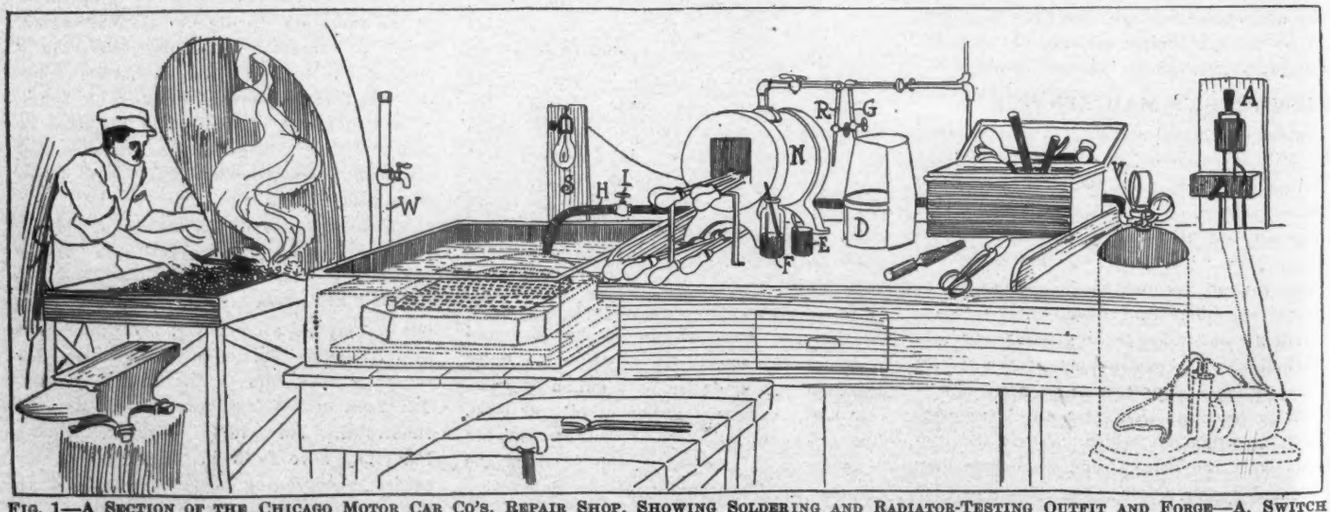


FIG. 1—A SECTION OF THE CHICAGO MOTOR CAR CO'S. REPAIR SHOP, SHOWING SOLDERING AND RADIATOR-TESTING OUTFIT AND FORGE—A, SWITCH AND STARTING-BOX OF AUTOMATIC AIR SUPPLY SYSTEM; D, DIPPING POT FOR CLEANING IRONS; E, DILUTE CUT ACID; F, CUT ACID; N, OVEN

Current Motor Car Patents

SELF-LOCKING Covered Priming Cup—No. 979,194, dated December 20; to William Osterhom, Chicago, Ill. — The priming cup to which this patent relates differs from the ordinary type in that it is provided with a cover, and the cover is designed so as to lock the valve-handle of the priming cup in the closed position. The cover C, Fig. 2, and the handle H of the valve are one piece, being cut and pressed from a single piece of metal. The cover is dished in the center so that a boss or beveled projection is formed on the inside of it that extends into the cup. A spring is provided between the handle of the valve and the body of the cup, so that when pressure is exerted on it in the right direction, the cover will ride up on the beveled ridge on the inside of it, till it clears the inner edge of the cup. Thus the unlocking or uncovering of the cup and opening of the valve are done simultaneously; and the cup while closed is kept free from accumulations of dust and water which might otherwise be carried into the cylinders when primed.

Flexible Pipe Joint—No. 978,876, dated December 20; to Warren A. Greenlaw, Melrose Highlands, Mass.—This patent relates to a flexible pipe connection which might be used to advantage in the motor car. As shown in Fig. 1, it is a combination of a pipe member A provided with a cup-shaped end; a second pipe member B having a ball-shaped end positioned within the cup-shaped end; a cap C threaded to the cup-shaped end; an annual packing ring R therein; and a spring-pressed ring G having a semispherical surface concentric with the ball-shaped end and a thin edge embedded in the annular packing ring. A connection or two of this design should be very much more substantial than the rubber hose connections now employed between the cylinder jackets and radiator of water-cooled motors; and also would permit of the use of oils and other suitable non-freezing cooling agents which now are prohibited on account of their disintegrating action upon the hose connections. Connections of this nature might also permit of improvements in the gasoline and oil-feed systems.

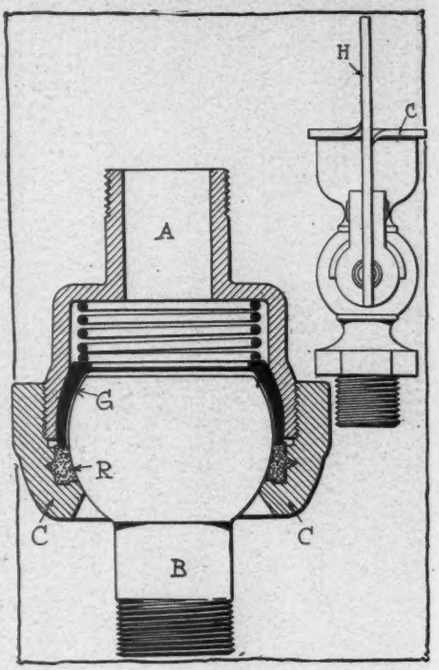


FIG. 1—GREENLAW'S FLEXIBLE PIPE JOINT
FIG. 2—OSTERHOM'S COVERED PRIMING CUP

Engine-Starting Device—No. 982,382, dated January 24; to Frank G. McKlveen and Leslie W. Naylor, Denver, Colo.—This patent relates to a means for starting the engine of a gasoline motor car from the driver's seat. The device comprises, as shown in Fig. 3, a sprocket on the crankshaft of the motor, a chain C communicating between this sprocket and another sprocket secured to a shaft T which is rotatably secured to the side member of the chassis frame, bevel gears G to transfer rotary motion to the shaft T from the shaft F, and a long hand lever L mounted on the outside of the chassis frame and secured to the shaft F, which is in a convenient position to be operated by the driver of the car. One of the bevel gears G is merely segmental, so that they may be normally disconnected; and the sprocket on the engine shaft is loosely mounted thereon and a ratchet and pawl connection provided.

To crank the motor, the operator has but to pull back on the hand lever, and the sector on the end of the shaft F will engage the bevel pinion gear on the rear end of the shaft T, the sprocket on the crankshaft will then be connected to it by means of the pawl and ratchet device and the motor crankshaft revolved.

Motor Car Street Sweeper—No. 982,570, dated January 24; to Carmen C. Brooks, Haxtum, Colo.—As illustrated in Fig. 4, this patent pertains to means of adapting the motor car to street-sweeping purposes. A yieldingly supported casing C movably mounted between the front and rear axles of the vehicle, supports removable pans P at either end thereof. A number of pairs of brushes B are revolvably supported by the casing near the ends, chains and gears are provided to drive the brushes and for revolving the respective pairs of brushes in opposite directions so that the sweepings are directed in the respective pans; and means are also provided whereby the operator of the vehicle may raise, lower or adjust the vertical position of the casing C. A rack for carrying extra pans is shown mounted behind the driver's seat.

New Windshield—No. 982,658, dated January 24, to William George Cox, Albany, N. Y.—This patent relates to a sectional windshield provided with a friction clamping device for holding the upper section in extended, folded or partly folded position, which is a most simple design. This device comprises a disk on the pivot of the sections, a ring surrounding the disk and a sliding member penetrating the ring which is adaptable for sliding engagement with the movable sections.

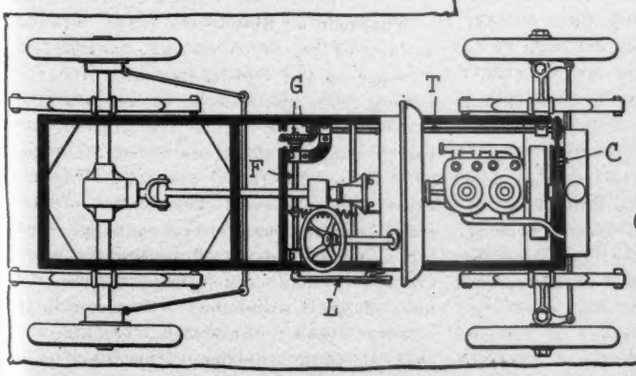


FIG. 3—MCKLVEEN'S ENGINE STARTER

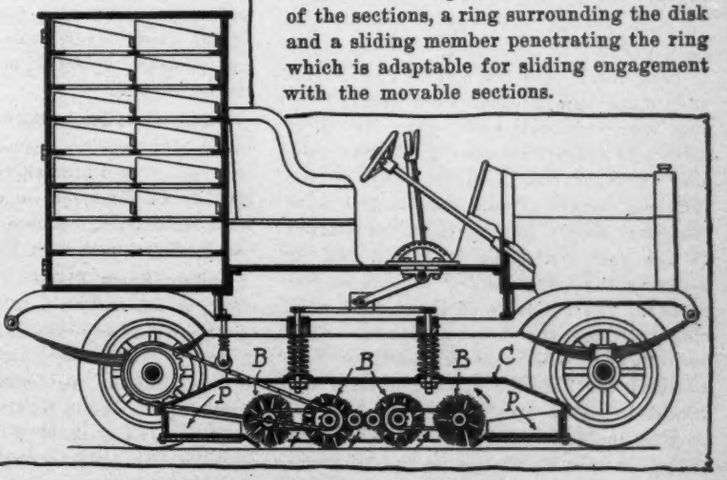


FIG. 4—BROOKS' MOTOR CAR STREET SWEEPER

From the

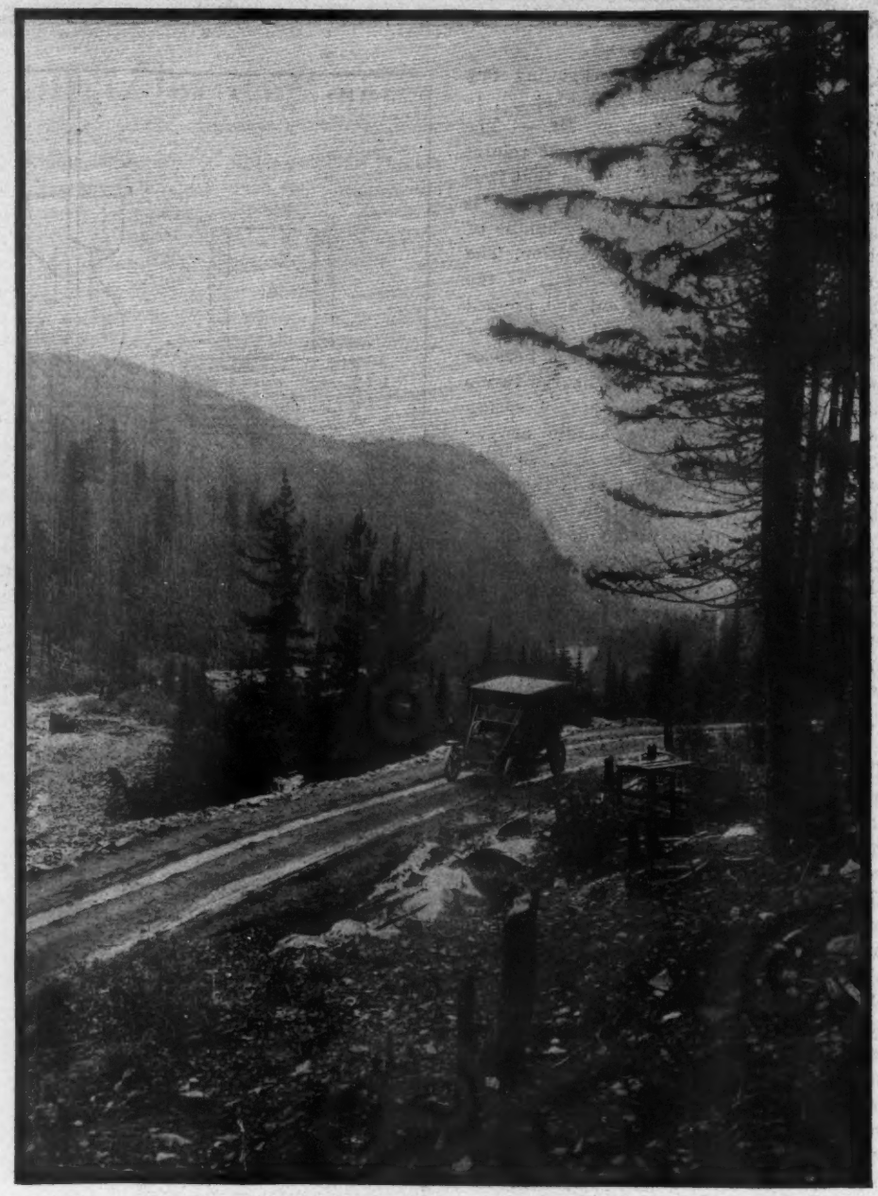
ROAD Works in Nebraska—More than 400 miles of roadways were graded in Lancaster county, Nebraska, during the year 1910. The county board also had erected in that time 125 concrete culverts, two reinforced concrete bridges, and one steel bridge. Steam and gasoline traction engines have been used as motive power for the grading machines. The cost of the grading has been approximately $30 a mile.

Object to More Taxes—The motoring interests of western Pennsylvania are preparing to make a bitter fight against the proposed increase of $10,000,000 yearly revenue for the state, to be raised by taxes on coal manufactories and motor cars, which is to be reported by the McNichol commission at Philadelphia. They maintain that this tax is entirely unnecessary especially on motor cars and motor trucks, which are already paying more than their share into the state treasury.

Laporte County Organizes—One of the biggest good roads movements in this part of northern Indiana is being promoted in Laporte county. An informal organization of Laporte business men is making plans for a stone road 20 miles in length, to be built to the Laporte and Starke county line, there to connect with a stone road from Knox. The valuation of the property through the townships where the road will be built is over 10 millions of dollars, and the tax for the construction would be light.

Seeks Horsepower Tax—Mayor Samuel Lewis Shank, of Indianapolis, is having an ordinance prepared increasing the annual city motor car license. At present it is $3 a year, regardless of type of vehicle or horsepower. The mayor believes the tax should be graduated according to horsepower, with two classifications for each horsepower—commercial and pleasure. There are about 2,000 motor cars in the city and the mayor looks forward to a neat sum for street improvement work by this means.

Good Business in Nebraska—Fifty per cent more cars were sold in Nebraska in 1910 than in 1909. On December 1, 1910, the records in the office of the secretary of state showed that 14,608 licenses had been granted in Nebraska. On December 1, 1909, there were but 8,489. That means that 6,119 new licenses were granted for the year, whereas 4,346 were issued in 1909. At least 7,000 cars must have been sold in Nebraska, because many of the previous owners of cars kept their license numbers, simply having them transferred to the new car. This is nearly half as many as the total number of cars in Nebraska. The majority of these sales were made through the Omaha dealers, either as retail or wholesale transactions. In addition to that, the Omaha dealers sell almost as many cars in western Iowa as they do in Nebraska. Other Omaha dealers sell cars in South Dakota and Missouri, and a few have the agencies for several states in addition. There are now in Omaha thirty-seven dealers in commercial and pleasure vehicles, handling sixty-five makes of cars.



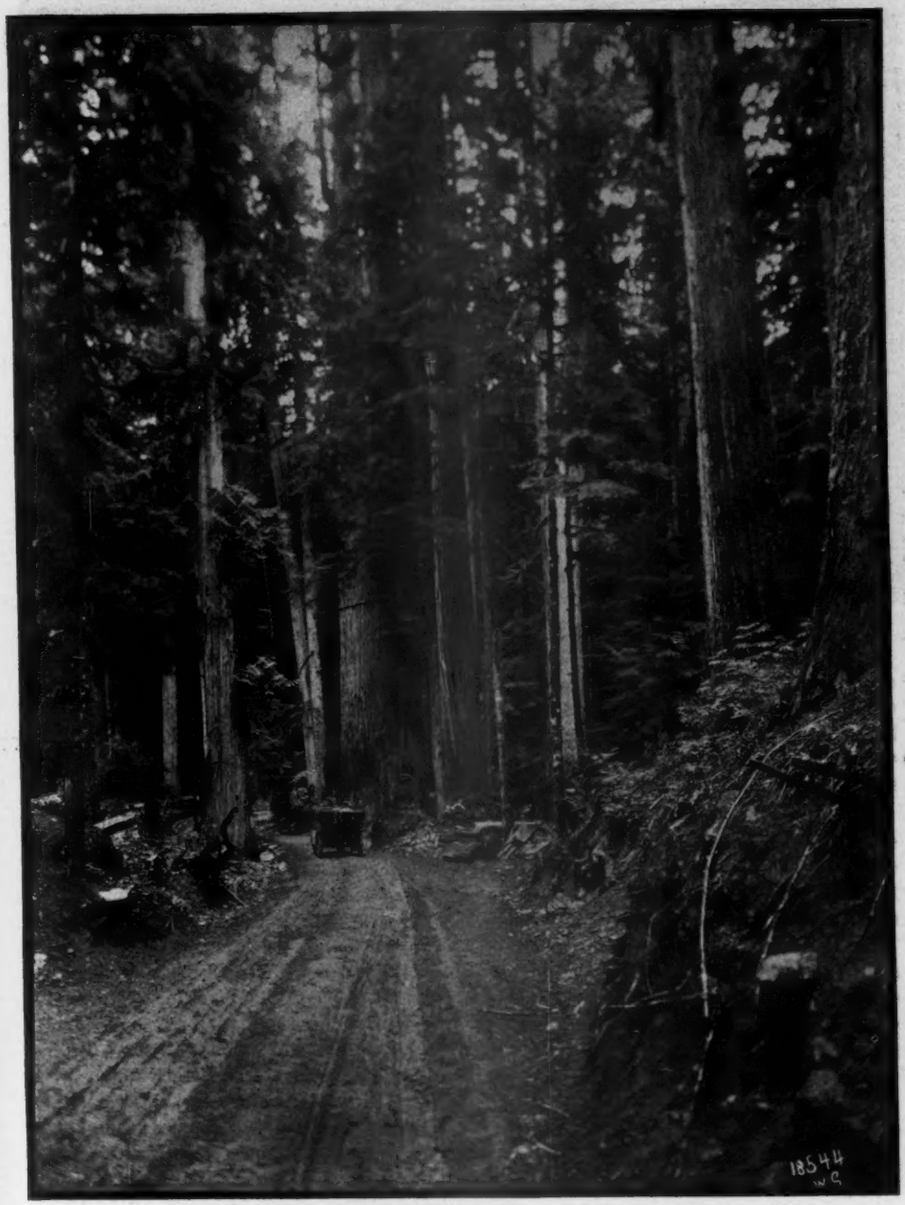
BEAUTIFUL SCENERY ENCOUNTERED IN STATE OF WASHINGTON

Makes A Mileage Record—In a mileage contest for electrics, owners driving, which took place in Philadelphia last Saturday, Mrs. L. C. Simmons in a Woods electric, with solid tires, covered 159 miles. The car was equipped with Exide batteries.

Buffalo Show Plans—The ninth annual show, which will be held in Buffalo, N. Y., in the Broadway arsenal from February 6 to 11 inclusive, under the auspices of the Buffalo Automobile Trade Association, promises to be the most successful ever held here, both in point of attendance and in the excellence of the exhibits. A great deal of money has been put into the decoration of the building and 5,000 electric lights have been installed in order that the displays may be seen to the best advantage.

Wisconsin's Stand—Governor Francis E. McGovern, of Wisconsin, in his first message to the legislature, made the following recommendation as regards the taxation of motor cars: "At present, motor cars in Wisconsin are taxed, if at all, as a form of personal property. The inutility of the present classification of personal property, made many years ago when large accumulations of personalty were unknown and many kinds of property now of great value had no existence, is nowhere better illustrated than in the case of these vehicles. There are substantial reasons now for recognizing them

Four Winds



MOTORING IN AN E-M-F IN FORESTS OF STATE OF WASHINGTON

as forming a distinct class for purposes of taxation. The present form of ad valorem taxation is not adapted to them. Instead, there should be provided a license fee based on weight or horsepower of these cars, and the revenue should be applied to highway purposes."

Indianapolis Show Program—The members of the Indianapolis Automobile Association are preparing for their annual show, to be held February 27 to March 4. The program for the week consists of educational displays and open houses at every one of the forty-one dealers, eighteen factories and twenty-seven accessory headquarters; street float parades and commercial parades, banquets and amateur contests at the Indianapolis motor speedway. The offices of the Indianapolis Trade Association, 716-717 Board of Trade building, have been designated as the official headquarters during the show and the preparations for it.

Favors Use of Cars—Postmaster David C. Owen, of Milwaukee, Wis., has been in Washington, D. C., for several days to consult with the postoffice department in relation to continuing the motor mail delivery and collection service in Milwaukee. Mr. Owen is the originator of the motor postal service in cities and successfully carried out an experiment 4 years ago, whereupon the postal department permitted him to replace the contract horse-and-wagon-hire system with motor car hire. The Johnson Service Co., of Milwaukee, which inaugurated the service, doubtless will be given a renewal of its contract, having twenty-three mail cars and a perfect system. The company furnishes the cars and drivers, all of whom are uniformed by the government. Mr. Owen is planning on extending the system still further, the present plan consisting only of delivery and collection of mail matter to and from the eight postal stations and the principal boxes along each route. It is proposed to make all collections by motor car and make trains with the mails by means of the motor vehicle.

Maryland's Count—About 1,500 motor vehicle licenses have been issued in Maryland since January 1 by Motor Vehicle Commissioner John E. George. According to the motor vehicle commissioner this represents fewer cars than there are in Baltimore alone, without counting those in the various counties and the city of Washington which have to get out state licenses. This is because many cars are stored away for the winter, and the law permits owners to delay getting licenses until the cars are used.

New Kentucky Measure—The closing session of the Kentucky Good Roads Congress saw the adoption of the measure drawn by the committee appointed for that work by the state good roads convention. For that reason, it marked a distinct and decisive advance in a movement designed to relieve Kentucky of the burden of more than eighty pauper counties and to give to the people of every section of the state the opportunity for that material and educational progress which isolation and poverty have heretofore denied to the majority of them. The passage of such a bill would mean much to the motorists of the state. All of them favor the measure, as well as the various motor organizations in Kentucky. Briefly summarized, the bill provides for a state highway commissioner, who shall prepare plans and specifications for the roads; it provides for the levy of a tax not to exceed 5 cents on the $100 of the assessable property of Kentucky for the purpose of aiding the counties in road building; no county is to receive state aid until the fiscal court of the county shall make application for it; the state is to pay one-half the cost of construction and the county is to pay the other half; no county is to be entitled in any one year to more than 2 per cent of the total amount collected in the state for road purposes; no county is to receive state aid a second time until state aid has been granted to all other counties applying in the same year; no county is to receive state aid until it first provides for a county tax of not less than 10 cents on the $100; fiscal courts shall have the right to make a levy of not exceeding 40 cents on the $100 for the maintenance of the roads; if the applications for state aid exceed the amount collected by the tax, the funds are to be equalized by the state highway commissioner, who shall prepare plans and specifications for the roads.

Among the Makers and Dealers

NEW WINDSHIELD PLANT OF THE TROY CARRIAGE SUNSHADE CO., OF TROY, OHIO

KRIT Bore Understated—In the tables on pages 19 and 38 of the January 26 issue of Motor Age the bore of the Krit motor was given as 3¼ inches. This should have been 3¾ inches. The horsepower of the motor is 22.5 instead of 16.9, as stated on page 38.

Another Stromberg Branch—The Stromberg Motor Devices Co. have opened a northwestern branch at 1514 Hennepin avenue, Minneapolis, Minn., in charge of Harvey Goodwin, who formerly was Boston branch manager, having been succeeded at that point by H. M. Coulter, former special factory representative. Several other Stromberg carbureter branches will be opened at other important points at an early date.

Lozier Plans—The administration building connected with the new plant of the Lozier works at Detroit, Mich., is nearing completion, and the officials and employes of the general offices are preparing to leave their present quarters in New York city to take possession of the new offices in Detroit. It is expected that by March 15 the entire force of executives will be doing business in the new Detroit headquarters. The five-story building at the corner of Fifty-sixth street and Broadway in New York city, which has for the past 3 years been the headquarters of the eastern sales department, as well as the general offices of the company, will, after March 1, be devoted entirely to the uses of the New York branch. The removal of the offices will give an additional floor space of about 16,000 square feet, and this will be added to the service department. The first and second floors will be devoted to a salesroom and display of new cars, and the third, fourth and fifth floors for used cars, service and stock rooms. A complete factory stock of parts will be kept on hand, so that customers' needs will be as well taken care of as at the factory.

Case Has New Shop—A new assembling shop is being erected for the motor car department of the J. I. Case Threshing Machine Co. at Racine, Wis., where the Case, formerly the Pierce-Racine, is made. The shop will be 100 by 50 feet in dimensions, of brick and steel construction, one story high, with saw-tooth roof. The Case company is working overtime in some departments.

Findlay After a Plant—The city of Findlay, O., is making efforts to secure a big plant manufacturing cars and accessories. The Lockport Stamping Co. of Lockport, N. Y., has been seeking a location in the middle west near the territory where most of its product has been sold, and it is stated on what appears to be good authority that the company has practically decided to consolidate with the Findlay Motor Co., making a concern with a capital stock of nearly half a million dollars.

Change at Rapid Plant—George A. Horner, general manager of the Rapid Motor Vehicle Co., and W. A. Voss, his assistant, have resigned their positions with that company, to take effect immediately. This announcement follows closely the appointment of F. C. Frank as factory manager. It is thought that the directors have in mind the selection of an eastern representative for the position of general manager, although Mr. Frank will have full charge of the mechanical departments. Horner and Voss have been with the company during the later years of its existence, having been engaged by H. G. Hamilton, former manager, for important clerical and managerial positions.

Handling Stutz Products—Brandenburg & Co., Chicago, have closed a contract with the Stutz Auto Parts Co. of Indianapolis to handle the output of the latter concern, which consists of rear axles and rear systems complete. The Stutz line has met with very good success, and the company intends to largely increase its output the coming year. It already has arranged to put up a large plant exclusively for the production of the line.

Engine Company Reorganizes—The Reliance Engine and Iron Co. of Racine, Wis., which decided to move to La Crosse, Wis., a short time ago, has been reorganized under the name of the Sta-Rite Engine Co., with a capitalization of $200,000, a large part of which is owned by La Crosse interests. A large factory will be erected this year. Temporary quarters will be in the La Crosse Plow Works, which will take the entire output. The plow company is state agent for the Imperial motor cars. The Sta-Rite concern will make a farm gasoline engine and other types.

Welch Quits Pontiac—The announcement was made this week that for the present, at least, no more Welch cars will be made in Pontiac, Mich. It is the intention of the General Motors Co. to make use of the local factory for the manufacture of engines for truck purposes and a considerable force of men will be employed for this purpose. Together with this information comes the statement that Wallace R. Willet will be placed in charge of the engine plant. In addition to the building of engines for trucks, the Welch-Detroit plant will also be supplied with engines

from the local factory. It was stated also that A. R. and F. S. Welch will discontinue their connection with the company this week.

Death of Milwaukee Dealer—George F. Gerlach, 1520 Grand avenue, Milwaukee, Wis., representative of the Baker electric, died suddenly last week, aged 48 years. Mr. Gerlach was connected with large brewing interests in Milwaukee up to 2 years ago, when he retired. He was prominent in society and a well known clubman.

Gramm Company Growth—The Gramm Motor Co., of Lima, O., which took possession of its new half-million dollar plant in that city January 3, now has 620 men on the payrolls. Architects now are at work mapping out another addition so that 900 men can be accommodated. The company paid 6 per cent dividends and passed $147,000 to surplus in 1910.

Election at Lansing—At the annual meeting of the stockholders of the Bates & Edmond Motor Co., of Lansing, Mich., held Thursday, a board of directors was elected for the ensuing year, as follows: J. Edward Roe, F. M. Seibley, M. F. Bates, J. P. Edmonds and H. D. Hill. Mr. Hill takes the place vacated by J. V. Barry, who recently moved to New York.

Pierce Retires—The report that A. J. Pierce, designer of the Pierce motor, now used exclusively in Case cars, has severed his connection with the motor department of the J. I. Case Threshing Machine Co. of Racine, Wis., is confirmed by officials of the concern. Mr. Pierce founded the Pierce Motor Co., which last summer went into control of the Case interests. His future plans are not announced.

Rubber Factory for Denver—The W. C. Hendrie Rubber Co., Denver agent for the Republic Rubber Co., has arranged to establish a plant in Denver for the manufacture of rubber pump valves and molded rubber goods. It will shortly open this new factory, which will be the only one of its kind between Chicago and the Pacific coast, and will be a distributing station for the entire Rocky mountain region.

New Windshield Plant—The Troy Carriage Sun Shade Co., of Troy, Ohio, has just built another factory building, in which will be manufactured exclusively the Troy automatic windsheld and speedometers. The new plant will also contain the general offices of the entire manufacturing system, which includes other factories making wagon umbrellas, carriage canopies, brass castings, advertising novelties, etc. This building is of sawtooth roof construction, concrete flooring throughout, and has a ground floor space of 200 by 200 feet. The offices are in the front part of the building on the second floor, which is 60 by 200 feet. The new plant has been found necessary in order than the windshield department can have a home of its own. In this plant the brass moldings are shaped, surfaces polished and the wood work finished. The company pours its own brass castings, has its own mills for the wood work, and builds the product from start to finish.

Kelly-Racine Plant Operating — The Kelly-Racine Rubber Co. of Racine, Wis., started operations on February 1, the $250,000 plant having reached the stage of completion to permit of actual operation.

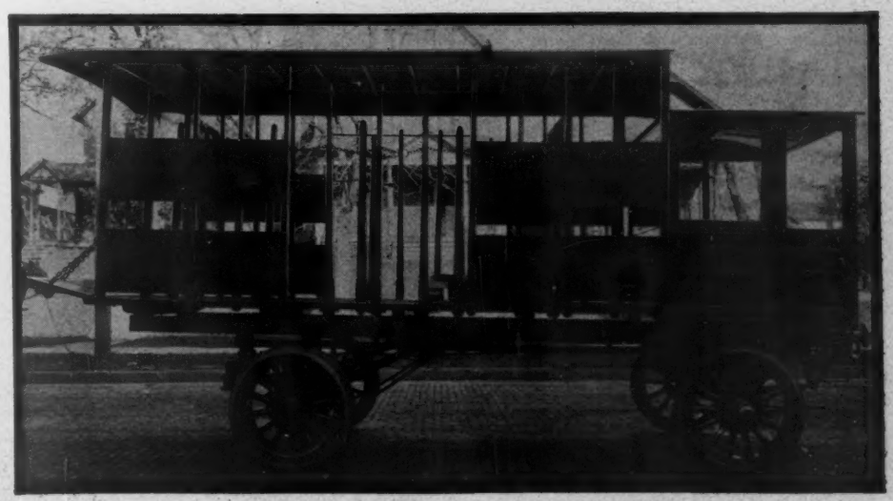
Old Dolson Plant Running—Members of the Duplex Power Co. held an important meeting at the company's plant recently, at Charlotte, Mich. The Duplex company formerly was the Dolson. It has nearly fifty members, mostly at Charlotte. It is capitalized at $100,000 and Calvin J. Hill, of Chicago, is president. A general unanimity of opinion was manifested at the meeting in favor of doubling the capital stock. This was done and a committee consisting of Frank A. Dean, Charles B. Lamb, Frank P. Town and Todd Lunsford was chosen to make a thorough canvass if necessary to raise the required sum of money.

Republic Agency in St. Paul—Announcement has just been made that the Republic Rubber Co. has established a new agency in St. Paul, Minn., to take care of the northwestern business. The new quarters of the company are located at 126 West Sixth street, in charge of F. W. Osmun.

Rambler Is Interested—The Thomas B. Jeffery Co., of Kenosha, Wis., maker of the Rambler, took a prominent part in the organization of the Wisconsin manufacturers' Association at Milwaukee last week. The objects of the association are to promote the social, economic and educational advancement of the state. Other manufacturers affiliated with the motor industry are among the membership.

The Show Circuit For This Winter

January 28-February 2 — Pleasure car show in Chicago.
February 1-4—Show at Worcester, Mass.
February 5-10—Show of National Exhibit and Auction Co., Pittsburg, Pa.
February 5-11—Show at Buffalo, N. Y.
February 6-11—Second week of national show in Coliseum, Chicago.
February 9-12—Show at Davenport, Ia.
February 13-18—Show at Winnipeg, Canada.
February 13-18—Show of Kansas City Motor Car Trade Association.
February 13-18—Show at St. Louis, Mo.
February 13-18—Show in Convention hall, Washington, D. C.
February 15-18—Show at Grand Rapids, Mich.
February 14-19—Show at Dayton, O.
February 18-25—Show at Minneapolis, Minn.
February 18-25—Show at Binghamton, N. Y.
February 18-25—Show at Brooklyn, N. Y.
February 18-25—Show at Newark, N. J.
February 20-21—Show at Portland, Me.
February 20-22—Show at Bloomington, Ill.
February 20-25—Show of Hartford Automobile Dealers' Association, Hartford, Conn.
February 20-25—Show at Omaha, Neb.
February 20-25—Show at Cincinnati, O.
February 20-25—Show at Baltimore, Md.
February 24-27—Show at New Orleans, La.
February 25-March 4—Show at Toronto, Canada.
February 27-March 4—Show of Kansas City Automobile Dealers' Association, Kansas City, Mo.
February 27-March 4—Show week at Indianapolis, Ind.
February 27-March 4 — Show at Sioux City, Iowa.
March 4-11—Show at Boston, Mass.
March 4-11—Show at San Francisco, Cal.
March 6-11—Show at Des Moines, Ia.
March 7-11—Show at Des Moines, Ia.
March 13-18—Show at Cedar Rapids, Ia.
March 14-18—Show at Syracuse, N. Y.
March 13-18—Show of Cleveland Automobile Dealers' and Makers' Association, Cleveland, O.
March 14-18—Show in Auditorium, Denver, Colo.
March 18-25—Show in Pittsburg, Pa.
April 5-8—Show at Sioux Falls, S. D.



WILCOX TRUCK WHICH IS IN SERVICE IN PITTSBURG

Recent Business Announcements

Activity of the Makers and Dealers. Agencies Placed and Other Changes in the Trade. Pithy Bits of News From Everywhere Concerning the Industry

JERSEY City, N. J.—The National Motors Co. will increase its capital to $1,000,000 from $500,000.

Plymouth, Wis.—Walter Sanders and E. W. Keil have opened a motor repair and electrical shop at Plymouth. They will carry a full line of supplies and accessories.

Lorain, O.—Mayor George Dyer, Allen Patterson and Joseph Patterson have disposed of their stock in the Majestic Auto Co., of Lorain, to C. W. S. Counsellor, D. R. Curtner, J. P. Miller and Elmer Webb.

Conneaut, O.—The Conneaut Auto Shop Co. has been incorporated with a capital of $10,000 to engage in the motor car business and operate a garage by V. E. Best, J. H. Wilcox, Matt G. Spalding, P. H. Best and C. C. Sessions.

Toledo, O.—The Warner Mfg. Co. has been incorporated with a capital of $500,000 to manufacture motor cars, motors, engines and machinery of all kinds by Thomas W. Warner, E. Stanton Janney, Nettie M. Warner, George D. Moore and Charles S. McCarty.

Cleveland, O.—The Anthracite Auto Co. has been incorporated with an authorized capital of $10,000 to manufacture and assemble motor cars and steam engines. The incorporators are Sidney Seidman, Henry White, James A. Joyce, Adolph B. Reppner and George S. Queen.

Springfield, O.—The Auto Inn Co. has been incorporated with an authorized capital of $15,000 to manufacture and repair all kinds of motor vehicles and to deal in parts and accessories by E. S. Kelly, H. E. Stewart, Charles L. Bauer, John L. Zimmerman, Ward J. Lee, J. S. Elliott and Richard Lee.

Milwaukee, Wis.—The Diamond Rubber Co., of New York, has established a branch in Milwaukee, Wis., under the management of E. B. Huyler and direction of C. H. Smith, manager of the Chicago branch. Headquarters have been opened at 132 Oneida street in Milwaukee. A. C. Langher will continue as traveling representative in the Wisconsin territory.

Milwaukee, Wis.—The Welch Brothers Motor Car Co., Grand avenue and Seventh street, Milwaukee, Wis., agent for the Packard and Rauch & Lang electric, now has one of the largest electric vehicle charging stations in the west. Improvements costing $20,000 have been completed and include a large electrical installation. The interior of the five-story building has been entirely remodeled, and the show rooms on the first floor are among the most beautiful of any in Milwaukee.

Racine, Wis.—The Kelly-Racine Rubber Co. is building a large garage as an addition to its new $250,000 plant.

Washington, D. C.—The Diamond Rubber Co. has opened a branch store at 1319 Fourteenth street, N. W. F. T. Elvidge is manager.

New York—The Whiting Motor Co., of 1802 Broadway, which is now handling the Cunningham car, has taken in addition to this the agency for the Mercer.

Detroit, Mich.—The Cole Motor Sales Co. has opened a new branch salesroom at 1580 Woodward avenue, in charge of Otto A. Seestedt and Charles Seestedt.

Pittsburg, Pa.—The United Motor Pittsburg Co. has just secured the Pittsburg agency for the Sampson trucks and will also continue to handle the Columbia and Maxwell cars.

Clyde, O.—The Clyde Auto Sales Co. has been incorporated with an authorized capital of $5,000 to operate a sales agency, garage and repair shop for motor cars by Ernest Van Benschalter, Dexter E. Perin, Minnie E. Perin, Ruth Van Benschalter and Maurice L. Huss.

Cleveland, O.—The Cleveland Regal Sales Co. has been incorporated with a capital of $10,000 to operate a sales agency and garage for the Regal line. The incorporators are Harry L. Lance, Celia L. McGowan, Virginia S. Sperry, Benjamin R. Stevens and George P. Sperry.

Portsmouth, O.—The Morton Heer Co. has been incorporated with an authorized capital of $10,000 to manufacture and sell gasoline and traction engines and to make self-propelled vehicles of all kinds by Frank E. Adams, Chris Heer, Arthur H. Bannon, Harry W. Heer and P. E. Selby.

Philadelphia, Pa.—On North Broad street ground is shortly to be broken for the erection of an eight-story garage, to be of fireproof construction. The site of the proposed building is the east side of Broad, extending from Pearl to Wood street. It will cost approximately $325,000, and will house the Packard.

Toledo, O.—The Warner Mfg. Co., now occupying one of the buildings of the Willys-Overland plant on Central avenue, has been incorporated with a capital stock of $500,000 by Thomas W. and Nettie M. Warner, E. Staunton Janney, Charles S. McCarthy and George D. Moore. Plans, it is stated, will shortly be announced for a new plant, when negotiations now under way are concluded. The company makes gears and other parts for cars.

Hartford, Conn.—The Frisbie-Heft Motor Co., of Middletown, has changed its name to the Frisbie Motor Co.

Racine, Wis.—The Burkert garage on Wisconsin street has been made the retail headquarters for the Case car, for the local territory.

New York—The Glidden Motor and Supply Co., agent for the Buick, has removed its warerooms to 239 West Fifty-eighth street, corner of Broadway.

Washington, D. C.—The Century Tire Co. has opened a salesroom at the corner of Fourteenth and R streets, N. W., with Harry D. Benner, formerly of the Michelin Tire Co., in charge.

Johnstown, Pa.—The Baker-McMullen Saddlery Co. has been organized at Johnstown by Andrew J. Baker, Charles H. McMullen and others, of that city, and will do a general business in supplies and saddlery.

Sheboygan, Wis.—The Wilke Auto and Machine Co., of Sheboygan, Wis., has disposed of its business and garage at 706-708 Center avenue to E. H. Rummele, Sheboygan representative of the Buick Motor Co. Possession will be given February 1.

Dayton, O.—The Barnard Carbureter Co. has been incorporated with an authorized capital of $100,000 to manufacture carbureters for gasoline engines. The incorporators are Davis Barnard, C. L. McCrea, Roscoe H. Stanter, J. M. Haas and C. J. Smith.

Cleveland, O.—The Mora Power Wagon Co. has been incorporated with an authorized capital of $750,000 to manufacture and sell motor cars and to manufacture parts and accessories by Millard H. Nason, Robert P. Abbey, Thomas S. Dunlap, A. F. Hatch and H. A. Mullen.

Uniontown, Pa.—The National Automobile Co. has been organized at Uniontown, with headquarters at 15 Ray street, by Dr. Frank B. Hess, president; O. S. Burchinal, treasurer; T. W. Lipman, manager. The company will handle the Lozier, Mitchell, Hudson and Locomobile cars.

San Francisco, Cal.—The Premier car is again represented in San Francisco, the agency having been taken by the Cartercar Auto Co., of which E. C. Collins is president and manager. The latter firm will continue to handle the Cartercar, but will use the Premier because of the larger models which it affords. The Cartercar

Concerning the Motor Industry

company has just moved into its attractive new quarters at the corner of Golden Gate avenue and Polk street.

Columbus, O.—The Robert F. Boda Co., of North Fourth street, has taken the central Ohio agency for the Thomas.

Altoona, Pa.—J. W. and M. B. Orner and M. J. Shiffler have opened a new garage at 2416 Union avenue and will handle the Metz and Maxwell.

Columbus, O.—The Cleveland Auto Sales and Mfg. Co. has been incorporated with an authorized capital of $25,000 to manufacture and sell motor cars by Charles A. Aaron and others.

Utica, N. Y.—The garage of the Utica Motor Car Co., 333 Bleecker street, has been purchased by Parks A. Terry and will be conducted by him in the future. It will be called the Terry Garage Co.

Cincinnati, O.—The Evans-Eich Mfg. and Sales Co. has been incorporated with a capital of $5,000 to manufacture and repair motor cars by William C. Evans, Clara Evans, Wendel Eich, Ella Eich and Earle C. Blair.

Marietta, O.—The Court Motor Car Co. has been incorporated with an authorized capital of $15,000 to operate a sales agency and a garage by H. J. Hinds, F. F. Riddle, J. A. Lovell, Jacob Spindler, Jr., and Jerry Bickley.

Norwalk, O.—E. E. Sly, of Norwalk, has awarded a contract for the construction of a new garage on Woodlawn avenue near the Wheeling and Lake Erie freight house. The size of the main structure will be 80 by 32 feet. A repair department will be installed.

Kenosha, Wis.—Herbert Shearer, formerly manager of the Chicago Brass Co. at Kenosha, Wis., has resigned as manager of the American Brass Co. to become general manager af the brass department of the Winchester Arms Co. at New Haven, Conn.

Delaware, O.—At the annual meeting of the stockholders of the Cook Motor Co. the following officers were elected: L. L. Denison, president and treasurer; H. W. Jewell, vice-president, and C. C. Stedman, secretary and manager.

San Francisco, Cal.—The Simplex car, made in New York city, is in new hands in San Francisco. Hereafter it will be represented by the Simplex Pacific Coast Agency, which controls the entire western territory with the exception of southern California. The agency here is in charge of J. N. Burge. The new company has secured attracitve salesrooms and a good-sized shop at 124-128 Van Ness avenue.

Washington, D. C.—The Hinds Auto Co. has leased the building at Fourteenth and S streets, N. W., and has taken the agency for the Lion and Schacht.

St. Paul, Minn.—The Republic Rubber Co. has decided to establish its northwestern agency here, at 126 West Sixth street, and in the charge of F. W. Osmun.

Charleroi, Pa.—H. C. Hepler and C. Matthews have organized the Keystone garage and will handle the E-M-F and Flanders at Sixth and McKean avenues.

Milwaukee, Wis.—R. D. Rockstead, Wisconsin factory representative of the Warren Motor Car Co., of Detroit, has established show rooms at 805 Grand avenue.

Pittsburg, Pa.—The Pittsburg Motor Car Co., recently incorporated, has purchased the buildings of the Pennsylvania Steel Pulley Co. on the north side and gradually will install equipment for a large plant.

Dayton, O.—The Dayton Auto Truck Co. has filed papers with the secretary of state of Ohio increasing its authorized capital stock from $50,000 to $200,000. V. C. Wampler is president and George W. Ozias secretary.

Cincinnati, O.—The J. H. Louis Automobile Co. has been incorporated with an authorized capital of $75,000 to manufacture and sell cars, parts and accessories by J. H. Louis, Peter Reiter, M. Y. Chenal, Thomas S. Danks and Edward G. Schurtz.

Washington, D. C.—The Rambler Automobile Co. has been formed to handle the Rambler in this section. Temporary headquarters have been established in the Riggs house. J. E. Sheldon is general manager of the company, which is planning to build a showroom on Connecticut avenue.

Indianapolis, Ind.—The Gibson Automobile Co. has completed arrangements to distribute the Brush in Indiana during 1911. During the last year the Brush was represented in Indiana by the Indianapolis Automobile Co. The Gibson company is also distributor in Indiana for the Everitt and Marion.

Mobile, Ala.—L. G. Adams and W. H. Florentine have secured control of the Gould Motor Car Co., the agency in this territory for the Cadillac; also the garage and repairing department occupied by the company on South Royal street. Mr. Adams has severed his connection with Bloch Brothers and will handle the city business. Mr. Florentine will have charge of the garage and outside agents.

Madison, Wis.—The brass foundry of Vogel & Swan, Waubesa street, was badly damaged by fire and will have to be rebuilt.

Toledo, O.—Harry H. Doering, formerly with the Blevins Auto Sales Co., has become manager of the Ohio electric sales of the Blevins company. The local concern has just closed a contract with the Ohio electric people for the exclusive sale of the Toledo-made car in Ohio, Indiana, Michigan, Pennsylvania and West Virginia.

Madison, Wis.—The Hokanson Automobile Co. has established another important branch under the name of the Square Deal Auto Co., of Monroe, Wis. J. C. Maddrell, of South Wayne, has taken an interest and will be general manager. A four-story building will be erected for the new company, which will distribute the Buick, White and Oldsmobile.

Fresno, Cal.—Plans are being drawn for a two-story brick garage and vulcanizing works for K. S. Cashin, 40 by 100 feet, to be erected at the present site of the vulcanizing works. The lower floor will be of cement and used as a garage, while the second floor will be a repair and vulcanizing room. The building will cost about $10,000.

Milwaukee, Wis.—The Edgar F. Sanger Co., representing the Maxwell, Stearns and Columbia cars, has arranged for larger garage and show-room quarters at 156-158 Farwell avenue and will move in 30 days. The Sanger garage at 52-60 Biddle street has been sold to the city of Milwaukee as repair shops and storage for the twelve municipal cars.

San Francisco, Cal.—A retail salesroom of the San Francisco branch of the Thomas B. Jeffery Co., of Kenosha, has been established on Geary street, near Powell. The store fronts on Union square, and is within a stone's throw of the great St. Francis hotel and a dozen other well known hostelries, and it is further surrounded by the fashionable stores of the city.

Madison, Wis.—Mier Brothers have been appointed agents for the Pullman and have leased the former Ledwig carriage works, which are now being remodeled into a garage and salesroom. John J. Meir, one of the partners, has been superintendent of the Pullman factory at York, Pa., for almost 2 years, and will handle a large territory from the Madison headquarters.

Organizations of New Motor Concerns Reported From Most of the States in the Union. Reports Show Numerous Concerns Being Started for Years' Trade

Legal Lights and Side Lights

MAINE CONSIDERING BILLS

THE Maine legislature is now in session, and among other topics that will be given consideration are motor cars and highways, as bills already have been put in to cover them. Senator A. F. Donigan has one bill that provides for taxing motor cars, according to horsepower, on the basis that motor cycles pay $2, cars of the first class $3, the second class $5, and the third class $10, while passenger-carrying companies using motor buses pay $100 yearly. It also contains a speed clause providing for 8 miles on curves, 15 miles on where there are cross roads, 12 miles where the houses are 100 feet apart, 15 miles where they are 200 feet apart, and 25 miles an hour on the state highways.

Representative Forrest H. Colby, who is a motorist, has introduced a bill taxing cars at $5 under 20 horsepower, $10 between 20 and 40, and $15 for all above 40 horsepower. The state grange put in a resolution along those lines. Representative Colby's bill calls for a 60-day limit on registration of outside cars.

Representative Philip G. Deering, of Portland, has put in an act designed to start work on a truck highway clear across the state from Kittery at the southern portion near the New Hampshire line up through Portland, Brunswick along the Kennebec river by the most direct route to Fort Kent, on the northern border near the Canadian line. Of the three-quarter of 1 mill tax now levied for state highways, he says, only $21,000 of the $121,000 available last year was used, leaving $100,000 for a state-wide trunk line, and he is anxious to have the matter taken up.

The men behind the motor bills feel that Maine should follow the Bay State in providing that the taxes, etc., from motor cars should be turned into a fund for the care and maintenance of state highways, so it is very probable the laws will be amended by the legislature this year along those lines.

DISTRICT WANTS LAW CHANGED

The board of assistant assessors has recommended that legislation be obtained requiring all owners of motor cars in the District of Columbia to register annually and receive a new license number. A fee of $1 is asked to cover the cost of the tag and the necessary clerical work. It is pointed out by the assessors that until this legislation is granted it will be impossible to fairly assess the motor cars operated in the district.

Assistant Assessor Talcott claims that the board of personal tax appraisers has difficulty in attempting certain assessments where motor cars are concerned because of not having sufficient data on which to base their assessment. The records of the permit office, he says, are so meager that "it is practically impossible to tell anything about a car other than its maker's name and the license number. The books of the office show cars as being owned by persons who have disposed of them, in a number of cases, several years ago, and there is no way of determining that such is the case, except upon the affidavit of the former owner of the car, or upon the application of the new owner for a new number. This latter step is seldom taken, and the machine is operated under its old number, which is in violation of the law."

Under the present system in vogue, motorists are not required to take out a new license each year, the number originally given them sufficing. Under this system it is practically impossible to tell how many cars are in operation in the District of Columbia.

ALABAMA HAS NEW BILL

State regulation of Alabama motor cars, rather than municipal control, will be the future order of things if a bill which is now pending in the legislature is passed by the solons and signed by the governor. Representative Frank Stollenwerck, of Montgomery county, author of the bill, has fashioned the measure directly after the New York law, which leaves with the secretary of state the registration of the cars, etc. This registration is based on a graduated horsepower scale, $7.50 being charged for the registration of a machine with horsepower less than 20; $12.50 for registration of car with horsepower between 20 and 30; $17.50 for horsepower between 30 and 40, and $22.50 for horsepower above 40. In the neighborhood of $100,000 would be brought to the state in revenue should the bill be passed.

The only speed limit specified in the measure is that of "reckless driving," which is prohibited under heavy penalties. Should an officer of the law think that a chauffeur is driving on a crowded thoroughfare so fast to endanger the life of a passerby, he is authorized to make the arrest. Upon conviction the chauffeur or proprietor of the car can be fined a minimum of $100, maximum of $250. Upon second conviction his license to operate the car will be cancelled. The law meets with the approval of the American Automobile Association.

WISCONSIN MOTORISTS AROUSED

The first bill aiming to regulate the licensing and use of motor cars has reached the Wisconsin legislature and its provisions are so radical in effect and in comparison to existing laws that every owner in the state is wrought up over the measure. The bill provides for an annual license fee of 25 cents per horsepower, with a minimum charge of $5. At present licenses are perennial, or so long as the car described in the license remains in the hands of the owner, and the fee is $2. The money is being used to support the secretary of state's department in charge of the registration, while the funds accruing from the proposed new license system are to be devoted entirely to good roads if the bill is passed.

The bill also contains provisions for licensing the hired motor car driver, or professional chauffeur. This is to suppress reckless driving and misuse of roads. Forfeiture of the license is the penalty for violation of laws. The owner is not affected by these provisions according to the terms of the bill.

Numerous bills are expected to be introduced bearing on the question of speed limit and penalties for violating such laws. The Milwaukee Social-Democrats will be especially active in this direction, demanding prison penalties where fines are now exclusively permitted. The Wisconsin State Automobile Association will again attempt to have passed a bill removing all speed limitations and making reckless driving as the circumstances may be, the act of violating the speed laws. The representatives from the rural districts cannot reconcile themselves to such a law and they will oppose it.

MICHIGAN AFTER LIGHT LAW

Under the direct supervision of the Michigan State Automobile Association, a bill will shortly be introduced in the state legislature, providing that all vehicles carry a light at night. The measure will be fathered by Representative A. Ward Copley, of Detroit. It reads as follows, stripped of the enacting clause:

"Every vehicle used upon the highways of this state—which said word 'vehicle' shall include horse-drawn vehicles or vehicles drawn by other beasts, carriages and all other means of conveyance, except motor cars and motor cycles, and such as run only upon rails and tracks—shall carry, during the period from 1 hour after sunset to 1 hour before sunrise, at least one lighted lamp, showing a light visible at least 250 feet. Said light shall be so displayed that it may be seen either in the direction toward which or from which the vehicle is proceeding."